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 NEWS  4  AUG 28  ADISCTI Reloaded and Enhanced
 NEWS  5  AUG 30  CA(SM)/CAplus(SM) Austrian patent law changes
 NEWS  6  SEP 11  CA/CAplus enhanced with more pre-1907 records
 NEWS  7  SEP 21  CA/CAplus fields enhanced with simultaneous left and right
                  truncation
 NEWS  8  SEP 25  CA(SM)/CAplus(SM) display of CA Lexicon enhanced
 NEWS  9  SEP 25  CAS REGISTRY(SM) no longer includes Concord 3D coordinates
 NEWS 10  SEP 25  CAS REGISTRY(SM) updated with amino acid codes for pyrrolysine
 NEWS 11  SEP 28  CEABA-VTB classification code fields reloaded with new
                  classification scheme
 NEWS 12  OCT 19  LOGOFF HOLD duration extended to 120 minutes
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                  multiple databases
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                  has been enhanced and reloaded
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 NEWS 18  NOV 03  JAPIO enhanced with IPC 8 features and functionality
 NEWS 19  NOV 10  CA/CAplus F-Term thesaurus enhanced
 NEWS 20  NOV 10  STN Express with Discover! free maintenance release Version
                  8.01c now available
 NEWS 21  NOV 13  CA/CAplus pre-1967 chemical substance index entries enhanced
                  with preparation role
 NEWS 22  NOV 20  CAS Registry Number crossover limit increased to 300,000 in
                  additional databases
 NEWS 23  NOV 20  CA/CAplus to MARPAT accession number crossover limit increased
                  to 50,000
 NEWS 24  NOV 20  CA/CAplus patent kind codes will be updated
 NEWS 25  DEC 01  CAS REGISTRY updated with new ambiguity codes

 NEWS EXPRESS  NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

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FILE LAST UPDATED: 5 Dec 2006  (20061205/ED)

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=> s ((lithium(3a)tantalate) or lita03)
        316104 LITHIUM
           365 LITHIUMS
        316230 LITHIUM
                 (LITHIUM OR LITHIUMS)
          9572 TANTALATE
          1055 TANTALATES
          9940 TANTALATE
                 (TANTALATE OR TANTALATES)
          3918 LITHIUM(3A)TANTALATE
             1 LITA03
L1        3918 ((LITHIUM(3A)TANTALATE) OR LITA03)

=> s l1 and stoichiometric
         72115 STOICHIOMETRIC
            51 STOICHIOMETRICS
         72156 STOICHIOMETRIC
                 (STOICHIOMETRIC OR STOICHIOMETRICS)
L2         207 L1 AND STOICHIOMETRIC

=> s l2 and ((two(4w)(wavelength or color or photon)) or nonvolatile)
       2288919 TWO
            41 TWOS
       2288951 TWO
                 (TWO OR TWOS)
        195537 WAVELENGTH
         67869 WAVELENGTHS
        243273 WAVELENGTH
                 (WAVELENGTH OR WAVELENGTHS)
        426457 COLOR
         46190 COLORS
        449669 COLOR
                 (COLOR OR COLORS)
        134527 PHOTON
         46798 PHOTONS
        159113 PHOTON
                 (PHOTON OR PHOTONS)
         31358 TWO(4W)(WAVELENGTH OR COLOR OR PHOTON)
         22975 NONVOLATILE
          1036 NONVOLATILES
         23875 NONVOLATILE
                 (NONVOLATILE OR NONVOLATILES)
```

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L3            8 L2 AND ((TWO(4W)(WAVELENGTH OR COLOR OR PHOTON)) OR NONVOLATILE)

=> s l2 and (((two or 2)(5a)(wavelength or color or photon)) or nonvolatile)
       2288919 TWO
            41 TWOS
       2288951 TWO
                 (TWO OR TWOS)
       8964522 2
        195537 WAVELENGTH
         67869 WAVELENGTHS
        243273 WAVELENGTH
                 (WAVELENGTH OR WAVELENGTHS)
        426457 COLOR
         46190 COLORS
        449669 COLOR
                 (COLOR OR COLORS)
        134527 PHOTON
         46798 PHOTONS
        159113 PHOTON
                 (PHOTON OR PHOTONS)
         81933 (TWO OR 2)(5A)(WAVELENGTH OR COLOR OR PHOTON)
         22975 NONVOLATILE
          1036 NONVOLATILES
         23875 NONVOLATILE
                 (NONVOLATILE OR NONVOLATILES)
L4           10 L2 AND (((TWO OR 2)(5A)(WAVELENGTH OR COLOR OR PHOTON)) OR NONVO
               LATILE)

=> d all 1-10

L4   ANSWER 1 OF 10  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2006:1218285  CAPLUS <<LOGINID::20061206>>
ED   Entered STN:  21 Nov 2006
TI   Monolithic red-green-blue laser light source based on cascaded wavelength
     conversion in periodically poled   ***stoichiometric***     ***lithium***
       ***tantalate***
AU   Gao, Z. D.; Zhu, S. N.; Tu, Shih-Yu; Kung, A. H.
CS   National Laboratory of Solid State Microstructures, Nanjing University,
     Nanjing, 210093, Peop. Rep. China
SO   Applied Physics Letters (2006), 89(18), 181101/1-181101/3
     CODEN: APPLAB; ISSN: 0003-6951
PB   American Institute of Physics
DT   Journal
LA   English
CC   73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB   A compact, pulsed, red, green, and blue laser source based on cascaded
     quasi-phase-matched   ***wavelength***   conversion in   ***two***
     periodic superlattices set in tandem in a single   ***stoichiometric***
     LiTaO3 crystal and pumped by a laser source at 532 nm is reported.  The
     white light equiv. flux obtained was 80 lm per 1 W input with a green to
     white light power conversion efficiency of .degree.30%.  Unity power
     conversion is feasible in this monolithic approach.

L4   ANSWER 2 OF 10  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2006:62509  CAPLUS <<LOGINID::20061206>>
DN   144:400496
ED   Entered STN:  23 Jan 2006
TI   Optical-damage-free guided second-harmonic generation in 1% MgO-doped
       ***stoichiometric***     ***lithium***     ***tantalate***
AU   Lobino, M.; Marangoni, M.; Ramponi, R.; Cianci, E.; Foglietti, V.;
     Takekawa, S.; Nakamura, M.; Kitamura, K.
CS   Dipartimento di Fisica-Politecnico INFM, Instituto di Fotonica e
     Nanotecnologie-CNR, Milan, 20133, Italy
SO   Optics Letters (2006), 31(1), 83-85
     CODEN: OPLEDP; ISSN: 0146-9592
PB   Optical Society of America
DT   Journal
LA   English
CC   73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
     Properties)
AB   Room-temp. cw second-harmonic generation from telecom   ***wavelengths***
     , with 30% W-1 cm-   ***2***   efficiency and second-harmonic power levels
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up to 41 mW, was achieved in buried waveguides fabricated by reverse-proton exchange in 1% MgO-doped ***stoichiometric*** ***lithium*** ***tantalate*** without any evidence of optical damage. The technol. proves suitable for the realization of efficient nonlinear frequency converters and all-optical devices.

ST magnesium oxide doped ***stoichiometric*** ***lithium*** ***tantalate*** second harmonic generation

IT Optical waveguides
Second-harmonic generation
(optical-damage-free guided second-harmonic generation in 1% magnesium oxide-doped ***stoichiometric*** ***lithium*** ***tantalate***)

IT 1309-48-4, Magnesium oxide, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(optical-damage-free guided second-harmonic generation in 1% magnesium oxide-doped ***stoichiometric*** ***lithium*** ***tantalate***)

IT 12031-66-2, ***Lithium*** ***tantalate***
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(optical-damage-free guided second-harmonic generation in 1% magnesium oxide-doped ***stoichiometric*** ***lithium*** ***tantalate***)

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L4 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1114096 CAPLUS <<LOGINID::20061206>>
DN 145:113254
ED Entered STN: 18 Oct 2005
TI Long lifetime of ***two*** - ***color*** ***nonvolatile*** holograms in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals
AU Kitamura, Kenji; Liu, Youwen; Takekawa, Shunji; Hatano, Hideki; Furukawa, Yasunori
CS Adv. Mater. Lab., National Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2004), 5362(Advanced Optical and Quantum Memories and Computing), 107-110
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***Two*** - ***color*** holog. is an effective soln. to the volatile readout problem in vol. holog. data storage based on photorefractive materials. Popular materials for ***two*** - ***color*** holog. are reduced doped and nondoped near- ***stoichiometric*** lithium niobate crystals. However, the lifetime at room temp. is from several weeks to several months depending on the redn. state of the material. Moreover, reductive treatment will degrade the nonvolatility of ***two*** - ***color*** holograms. The important issue for ***two*** -

color holog. is how to increase the lifetime. In this contribution, lifetimes of ***two*** - ***color*** ***nonvolatile*** holograms recorded in as-grown near- ***stoichiometric*** ***lithium*** niobate and ***tantalate*** crystals were compared by extrapolating the high-temp. data. The dark-decay time consts. obey an Arrhenius dependence on abs. temp. and yield activity energy of 1.06 eV around in all measured crystals. Lifetimes of holograms in nondoped and slightly doped crystals depend on the proton concn. Lifetimes of hologram in ***lithium*** ***tantalate*** are one order of magnitude longer than those in lithium niobate at the same proton concn. The lifetime of ***two*** - ***color*** holograms in lithium tantalite is longer than 20 years.

ST long lifetime color ***nonvolatile*** holograms near ***stoichiometric*** ***lithium*** ***tantalate***

IT Holographic memory devices
Holographic recording materials
Photorefractive materials
(long lifetime of ***two*** - ***color*** ***nonvolatile*** holograms in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)

IT 12031-66-2, ***Lithium*** ***tantalate*** (LiTaO3)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(long lifetime of ***two*** - ***color*** ***nonvolatile*** holograms in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)

IT 14280-30-9, Hydroxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(long lifetime of ***two*** - ***color*** ***nonvolatile*** holograms in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L4 ANSWER 4 OF 10 CAPLUS
AN 2005:119291 CAPLUS <<LOGINID::20061206>>
DN 144:180652
ED Entered STN: 11 Feb 2005
TI Investigation on dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** LiNbO3 and LiTaO3
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Ravi, Ganesan; Nakamura, Masaru; Hatano, Hideki
CS Advanced Materials Laboratory, National Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2005), 5646(Nonlinear Optical Phenomena and Applications), 623-627
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB We have investigated the dark decay mechanism by measuring dark decay time consts. of ***two*** - ***color*** holograms recorded in undoped and slightly doped near- ***stoichiometric*** LiNbO3 and LiTaO3 crystals in the temp. range from 50 to 200.degree.C. All the samples in this work obey an Arrhenius-type dependence of time const. on abs. temp., and yield

nearly same activation energies of 1.08 eV. The results show that proton compensation mechanism dominated the dark decay process. Lifetimes of holograms at room temp. in LiTaO3 are one order of magnitude longer than that in LiNbO3 if having the same proton concn.

ST dark decay ***two*** ***color*** holograms lithium niobium oxide tantalum

IT Stretching vibration
(hydroxyl, proton compensation; study of dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** lithium niobium oxide and lithium tantalum oxide)

IT Diffusion
(proton; study of dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** lithium niobium oxide and lithium tantalum oxide)

IT Activation energy
Boltzmann equation
Curie temperature (ferroelectric)
Czochralski crystal growth
Holographic recording materials
Photorefractive materials
Proton transfer
(study of dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** lithium niobium oxide and lithium tantalum oxide)

IT Holography
(***two*** - ***color*** ; study of dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** lithium niobium oxide and lithium tantalum oxide)

IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; study of dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** lithium niobium oxide and lithium tantalum oxide)

IT 3352-57-6, Hydroxyl, properties 12586-59-3, Proton
RL: PRP (Properties)
(proton compensation; study of dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** lithium niobium oxide and lithium tantalum oxide)

IT 12031-63-9, Lithium niobate (LiNbO3) 12031-66-2, ***Lithium*** ***tantalate*** (LiTaO3)
RL: TEM (Technical or engineered material use); USES (Uses)
(study of dark decay of ***two*** - ***color*** holograms in near- ***stoichiometric*** lithium niobium oxide and lithium tantalum oxide)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(2) Coufal, H; Holographic Data Storage 2000
(3) Guenther, H; Appl Opt 1998, V37, P7611 CAPLUS
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L4 ANSWER 5 OF 10 CAPLUS
AN 2004:1034466 CAPLUS <<LOGINID::20061206>>

DN 143:275499
ED Entered STN: 03 Dec 2004
TI Comparison of ***two*** - ***color*** hologram lifetimes of near- ***stoichiometric*** ***lithium*** niobate and of ***tantalate*** crystals
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Ravi, Ganesan; Nakamura, Masaru; Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory, National Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SO Applied Optics (2004), 43(31), 5778-5783
CODEN: APOPAI; ISSN: 0003-6935
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Lifetimes of ***two*** - ***color*** ***nonvolatile*** holograms recorded in undoped- or in slightly doped near- ***stoichiometric*** ***lithium*** niobate and ***tantalate*** crystals were measured and compared by extrapolation of the high-temp. data. A proton-compensation mechanism dominated the dark decay and yielded similar activation energies, of 1.05 and 1.10 eV, for near- ***stoichiometric*** ***lithium*** niobate and ***tantalate*** crystals, resp. The lifetime of holograms in ***lithium*** ***tantalate*** was 1 order of magnitude longer than that in lithium niobate with the same proton concn., which was consistent with our theor. estn. The projected lifetime of ***two*** - ***color*** holograms in ***lithium*** ***tantalate*** without observable OH- absorption is longer than 50 years.
ST hologram lifetime ***lithium*** niobate ***tantalate*** crystal
IT Activation energy
Curie temperature (ferromagnetic)
Dopants
Holographic recording materials
IR spectra
Stoichiometry
UV and visible spectra
(lifetimes of ***two*** - ***color*** holograms recorded in near- ***stoichiometric*** ***lithium*** niobate and ***lithium*** ***tantalate*** crystals)
IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 14280-30-9, Hydroxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(lifetimes of ***two*** - ***color*** holograms recorded in near- ***stoichiometric*** ***lithium*** niobate and ***lithium*** ***tantalate*** crystals)
IT 12031-63-9, Lithium niobate $LiNbO_3$ 12031-66-2, ***Lithium*** ***tantalate*** ($LiTaO_3$)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(lifetimes of ***two*** - ***color*** holograms recorded in near- ***stoichiometric*** ***lithium*** niobate and ***lithium*** ***tantalate*** crystals)
RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
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AN 2004:898812 CAPLUS <<LOGINID::20061206>>
DN 141:373802
ED Entered STN: 28 Oct 2004
TI Ferroelectric materials and their ***2*** - ***color*** holographic memory media and wave filter
IN Hatano, Hideki; Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masru; Furukawa, Yasunori
PA Pioneer Electronic Corp., Japan; Toshiba Denko Co., Ltd.; Oxide Corporation
SO Jpn. Kokai Tokkyo Koho, 21 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C30B029-30
ICS C01G035-00; G02B001-02; G02B005-28; G03H001-02
CC 76-8 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004300015	A2	20041028	JP 2004-40215	20040217
	US 2004234867	A1	20041125	US 2004-798974	20040312
PRAI	JP 2003-69897	A	20030314		
	JP 2004-40215	A	20040217		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004300015	ICM	C30B029-30
	ICS	C01G035-00; G02B001-02; G02B005-28; G03H001-02
	IPCI	C30B0029-30 [ICM,7]; C30B0029-10 [ICM,7,C*]; C01G0035-00 [ICS,7]; G02B0001-02 [ICS,7]; G02B0001-00 [ICS,7,C*]; G02B0005-28 [ICS,7]; G03H0001-02 [ICS,7]
	IPCR	G03H0001-02 [I,A]; G03H0001-02 [I,C*]; G03H0001-26 [I,A]; G03H0001-26 [I,C*]
	FTERM	2H048/GA03; 2H048/GA13; 2H048/GA33; 2H048/GA60; 2H048/GA62; 2K008/AA04; 2K008/BB05; 2K008/DD23; 2K008/EE01; 2K008/FF17; 2K008/HH01; 2K008/HH06; 2K008/HH13; 2K008/HH18; 2K008/HH26; 2K008/HH28; 4G048/AA04; 4G048/AB01; 4G048/AB02; 4G048/AB05; 4G048/AC02; 4G048/AD07; 4G048/AE05; 4G077/AA02; 4G077/AB04; 4G077/CF10; 4G077/EC07; 4G077/HA11
US 2004234867	IPCI	G03H0001-02 [ICM,7]
	IPCR	G02B0005-28 [I,C*]; G02B0005-28 [I,A]; C01G0035-00 [I,C*]; C01G0035-00 [I,A]; C30B0029-10 [I,C*]; C30B0029-30 [I,A]; G02B0001-00 [I,C*]; G02B0001-02 [I,A]; G03H0001-02 [I,C*]; G03H0001-02 [I,A]; G03H0001-26 [I,C*]; G03H0001-26 [I,A]
	NCL	430/001.000; 359/007.000; 430/002.000
	ECLA	G03H001/02; G03H001/26; G11B007/0045; G11B007/0065; G11B007/125L2; G11B007/243

AB The ferroelec. materials whose refractive indexes change by irradn. of ***2*** lights of different ***wavelength*** without redn. treatment nor addn. of impurities comprise single-cryst. Li tantalate (LT) having the compn. of $Li_2O/(Li_2O + Ta_2O_5) = 0.4966-0.4995$, i.e., near- ***stoichiometric*** (NS) compn. Preferably, the proton concn. in the NSLT single crystal is defined that IR absorption coeff. in the [OH]

stretch mode becomes 0-0.15 cm-1. The ***2*** - ***color*** holog.
memory media contain the NSLT single crystal. The wave filter contains
the NSLT single crystal having .gtoreq.1 refractive index gratings.
ST near ***stoichiometric*** ***lithium*** ***tantalate***
ferroelec material; ***two*** ***color*** holog memory ferroelec
lithium ***tantalate*** ; wave filter ferroelec ***lithium***
tantalate ; dopant free near ***stoichiometric***
lithium ***tantalate***
IT Ferroelectric materials
Holographic recording materials
Optical filters
(single-cryst. near- ***stoichiometric*** Li tantalate ferroelec.
materials for ***2*** - ***color*** holog. memory media and wave
filter)
IT 12031-66-2DP, ***Lithium*** ***tantalate*** , near-
stoichiometric
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(single-cryst. near- ***stoichiometric*** Li tantalate ferroelec.
materials for ***2*** - ***color*** holog. memory media and wave
filter)

L4 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:463034 CAPLUS <<LOGINID::20061206>>
DN 141:181874
ED Entered STN: 09 Jun 2004
TI ***Two*** - ***color*** photorefractive properties in near-
stoichiometric ***lithium*** ***tantalate*** crystals
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masaru;
Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory, National Institute for Materials Science,
1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan
SO Journal of Applied Physics (2004), 95(12), 7637-7644
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 73, 76
AB The ***two*** - ***color*** photorefractive properties in undoped
as-grown near- ***stoichiometric*** ***lithium*** ***tantalate***
crystals were investigated, where a near-IR laser and a cw UV beam were
used for writing and gating, resp. The key parameters in characterizing
two - ***color*** photorefractive effect, light-induced
absorption change, ***two*** - ***color*** sensitivity, refractive
index change, readout characteristics, and dark decay were measured by
changing intensities of gating and writing beams, wavelengths of gating
and writing beams for the crystals with different near-
stoichiometric crystal compns., and proton concns. The results
showed that there exists an optimal crystal compn. of around 49.65% for
both sensitivity and refractive index change together with moderate
lifetime of small polarons. The achieved refractive index change was on
the order of 10-4, and the obtained max. sensitivity was 0.18 cm/J. The
extrapolated lifetime of holograms at room temp. in the crystals without
observable OH- absorption was longer than 50 yr. The measurements of
UV-induced absorption change at room temp. and low temp. of 77.3 K
suggested that the unintentional impurity of Fe and intrinsic defects were
responsible for ***two*** - ***color*** photorefractive effect. The
excellent ***two*** - ***color*** photorefractive properties of
undoped as-grown near- ***stoichiometric*** ***lithium***
tantalate crystals were discussed based on this mechanism and the
phys. properties of ***lithium*** ***tantalate*** .
ST ***two*** ***color*** photorefractive near ***stoichiometric***
lithium ***tantalate*** holog
IT Refractive index
(changes of near- ***stoichiometric*** ***lithium***
tantalate crystals)
IT Curie temperature (ferroelectric)
IR spectra
Optical recording
UV and visible spectra

(of near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT Polaron
(polaron lifetime of near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT Holography
(***two*** - ***color*** holog. recording in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT Crystal defects
Photorefractive effect
(***two*** - ***color*** photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT 7439-96-5, Manganese, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(***two*** - ***color*** photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT 7439-89-6, Iron, properties
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)
(***two*** - ***color*** photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT 12031-66-2D, ***Lithium*** ***tantalate*** (LiTaO3), near ***stoichiometric***
RL: PRP (Properties)
(***two*** - ***color*** photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
RE.CNT 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(37) Yang, Y; J Opt Soc Am B 2003, V20, P1491 CAPLUS

L4 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:397282 CAPLUS <<LOGINID::20061206>>
DN 142:143937
ED Entered STN: 17 May 2004
TI ***Nonvolatile*** holographic storage in near- ***stoichiometric***

LiTaO3 crystals
AU Liu,. Y.; Kitamura, K.; Takekawa, S.; Nakamura, M.; Furukawa, Y.; Hatano, H.
CS Nanomaterials Laboratory, National Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SO Trends in Optics and Photonics (2003), 88(Conference on Lasers and Electro-Optics (CLEO), 2003), CWA25/1-CWA25/2
CODEN: TOPRBS
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***Nonvolatile*** holograms have been recorded in non doped near- ***stoichiometric*** LiTaO3 crystal of 2 mm-thickness. High sensitivity of 0.067 cm/J and large M/# of 1.59 are achieved simultaneously for gating intensity of 0.31 W/cm2 and writing intensity of 12.8 W/cm2.
ST ***nonvolatile*** holog storage near ***stoichiometric*** ***lithium*** ***tantalate*** crystal; holog recording near ***stoichiometric*** ***lithium*** ***tantalate*** crystal
IT Holographic recording materials
Holography
(***nonvolatile*** holog. storage in near- ***stoichiometric*** LiTaO3 crystals)
IT 12031-66-2D, ***Lithium*** ***tantalate*** (LiTaO3), near- ***stoichiometric***
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(***nonvolatile*** holog. storage in near- ***stoichiometric*** LiTaO3 crystals)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Guenther, H; Appl Opt 1998, V37, P7611 CAPLUS
(2) Hesselink, L; Science 1998, V282, P1089 CAPLUS
(3) Imbrock, J; Opt Lett 1999, V24, P1302 CAPLUS
(4) Liu, Y; Appl Phys Lett 2002, V81, P2686 CAPLUS

L4 ANSWER 9 OF 10 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:682977 CAPLUS <<LOGINID::20061206>>
DN 140:189865
ED Entered STN: 02 Sep 2003
TI ***Two*** - ***color*** holographic recording in nondoped near- ***stoichiometric*** ***lithium*** ***tantalate*** with continuous-wave lasers
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masaru; Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory and Nanomaterials Laboratory, National Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SO Trends in Optics and Photonics (2003), 87(Photorefractive Effects, Materials, and Devices), 642-648
CODEN: TOPRBS
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***Nonvolatile*** ***two*** - ***color*** holog. recording was demonstrated in as-grown nondoped SLT crystals with a high sensitivity of 0.086 cm/J with a gating intensity of 1 W/cm2 at 350 nm, a large refractive index change of as much as 1.times.10-4, a high resistance to IR erasure and a long hologram lifetime of five years. Dependences of ***two*** - ***color*** sensitivity and dynamic range on gating and writing intensities are presented. The sensitivity can be further enhanced using writing and gating beams of shorter wavelength without sacrificing readout nonvolatility. 50 Plane-wave holograms are angle-multiplexed with M/# of 0.95.
ST ***nonvolatile*** ***two*** ***color*** holog recording ***lithium*** ***tantalate*** crystal
IT Holographic recording materials
Holography
(***nonvolatile*** ***two*** - ***color*** holog. recording in as-grown nondoped ***lithium*** ***tantalate*** using

continuous-wave lasers)
IT Holographic memory devices
(vol.; ***nonvolatile*** ***two*** - ***color*** holog. recording in as-grown nondoped ***lithium*** ***tantalate*** using continuous-wave lasers in relation to)
IT 12031-66-2, ***Lithium*** ***tantalate*** ($LiTaO_3$)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(***nonvolatile*** ***two*** - ***color*** holog. recording in as-grown nondoped ***lithium*** ***tantalate*** using continuous-wave lasers)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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AN 2003:458344 CAPLUS <<LOGINID::20061206>>
DN 139:157314
ED Entered STN: 16 Jun 2003
TI ***Nonvolatile*** ***two*** - ***color*** holographic recording in nondoped near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals with continuous-wave lasers
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masaru; Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory and Nanomaterials Laboratory, National Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan
SO Applied Physics Letters (2003), 82(24), 4218-4220
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***Nonvolatile*** holograms have been recorded in nondoped near- ***stoichiometric*** $LiTaO_3$ crystals by use of a near-IR laser for writing and a UV beam as a gating source. This material exhibits good overall ***two*** - ***color*** holog. recording characteristics including a high sensitivity of 0.086 cm/J with a gating intensity of 1 W/cm2 at 350 nm, a large refractive index change of as much as 1.times.10-4, a high resistance to IR erasure, and a long hologram lifetime of five years. The sensitivity can be further enhanced using writing and gating beams of a shorter wavelength without sacrificing readout nonvolatility.
ST ***nonvolatile*** ***two*** ***color*** holog recording ***stoichiometric*** ***lithium*** ***tantalate*** crystal
IT Holography
(***nonvolatile*** ***two*** - ***color*** holog. recording in nondoped near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals with continuous-wave)
IT Holographic recording materials
(***nonvolatile*** ***two*** - ***color*** holog. recording in nondoped near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals with continuous-wave lasers)
IT 12031-66-2, ***Lithium*** ***tantalate*** ($LiTaO_3$)

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(***nonvolatile*** ***two*** - ***color*** holog. recording in nondoped near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals with continuous-wave lasers)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(15) Schirmer, O; J Phys Chem Solids 1991, V52, P185 CAPLUS
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=> d his

     (FILE 'HOME' ENTERED AT 07:51:05 ON 06 DEC 2006)

     FILE 'CAPLUS' ENTERED AT 07:51:17 ON 06 DEC 2006
L1        3918 S ((LITHIUM(3A)TANTALATE) OR LITA03)
L2         207 S L1 AND STOICHIOMETRIC
L3           8 S L2 AND ((TWO(4W)(WAVELENGTH OR COLOR OR PHOTON)) OR NONVOLATI
L4          10 S L2 AND (((TWO OR 2)(5A)(WAVELENGTH OR COLOR OR PHOTON)) OR NO

=> s l2 and (filter or grating)
        258635 FILTER
        133812 FILTERS
        313276 FILTER
                 (FILTER OR FILTERS)
         34420 GRATING
         20459 GRATINGS
         40460 GRATING
                 (GRATING OR GRATINGS)
L5          11 L2 AND (FILTER OR GRATING)

=> d all 1-11
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L5 ANSWER 1 OF 11 CAPLUS

AN 2005:1111753 CAPLUS <<LOGINID::20061206>>

DN 144:180007

ED Entered STN: 17 Oct 2005

TI Periodic poling of ***stoichiometric*** ***lithium*** ***tantalate***

AU Bamford, Douglas J.; Cook, David J.; Sharpe, Scott J.

CS Physical Sciences Inc., San Ramon, CA, 94583-1295, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (2004), 5337(Nonlinear Frequency Generation and Conversion: Materials, Devices, and Applications III), 30-38
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

AB The periodic poling of ***stoichiometric*** ***lithium*** ***tantalate*** , a nonlinear optical material with great promise for the frequency conversion of high-av.-power solid state lasers, has been investigated. Two problems with com. available ***stoichiometric*** ***lithium*** ***tantalate*** substrates have been identified:

non-reproducibility of the coercive field from one wafer to the next, and susceptibility to the formation of micro-domain defects. Strategies for dealing with these problems have been developed. Wafer-scale poling has been carried out to produce quasi-phasematching ***gratings*** with periods as short as 7.3 .mu.m on half-millimeter thick substrates and 25.4 .mu.m on millimeter-thick substrates. The phase-matching properties of periodically poled ***stoichiometric*** ***lithium*** ***tantalate*** have been measured using nonlinear optical frequency conversion. For processes which generate visible radiation, good agreement with predictions based on the published Sellmeier equation for ***stoichiometric*** lithium tantalite has been obtained.

ST ***stoichiometric*** ***lithium*** ***tantalate*** periodic poling

IT Curie temperature (ferroelectric)
Electric field effects
(periodic poling of ***stoichiometric*** ***lithium*** ***tantalate*** , a nonlinear optical material for frequency conversion of high-av.-power solid state lasers)

IT Dielectric polarization
(periodic poling of ***stoichiometric*** ***lithium*** ***tantalate*** , nonlinear optical material for frequency conversion of high-av.-power solid state lasers)

IT Nonlinear optical materials
Nonlinear optical properties
(phase-matching properties of periodically poled ***stoichiometric*** ***lithium*** ***tantalate*** using nonlinear optical frequency conversion)

IT 12031-66-2, ***Lithium*** ***tantalate***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(periodic poling of ***stoichiometric*** ***lithium*** ***tantalate*** , nonlinear optical material for frequency conversion of high-av.-power solid state lasers)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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AN 2005:863920 CAPLUS <<LOGINID::20061206>>
DN 143:484730
ED Entered STN: 23 Aug 2005
TI Interband photorefraction in pure and Mg-doped near- ***stoichiometric*** $LiTaO_3$
AU Juvalta, F.; Dittrich, Ph.; Jazbinsek, M.; Gunter, P.; Montemezzani, G.; Kitamura, K.; Furukawa, Y.
CS Nonlinear Optics Laboratory, Swiss Federal Institute of Technology, Zurich, CH-8093, Switz.
SO Trends in Optics and Photonics (2005), 99(Photorefractive Effects, Materials, and Devices), 96-100
CODEN: TOPRBS
PB Optical Society of America
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB We investigate interband photorefraction in pure and Mg-doped near- ***stoichiometric*** $LiTaO_3$ at the deep UV wavelength of 257 nm. By

controlling the stoichiometry, the response time and dynamic range of the interband photorefractive effect can be very much improved. Measured time consts. are in the order of a few tens of milliseconds for UV light intensities of about 100 mW/cm2. Further, we report that Mg doping of near- ***stoichiometric*** LiTaO3 increases the ***grating*** response rate by a factor of 50 compared with the one in undoped crystals. For UV light intensities larger than 500 mW/cm2 the response time is faster than one millisecond. In Mg-doped near- ***stoichiometric*** LiTaO3, quasi-fixing of holog. ***gratings*** with UV light and nondestructive readout in the visible has been obsd.

ST pure magnesium doped near ***stoichiometric*** ***lithium*** ***tantalate*** interband photorefraction

IT Photorefractive effect
UV and visible spectra
(interband photorefraction in pure and magnesium-doped near- ***stoichiometric*** lithium tantalum oxide at deep UV wavelength of 257 nm)

IT 12031-66-2, Lithium tantalum oxide (LiTaO3)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(Mg-doped; interband photorefraction in pure and magnesium-doped near- ***stoichiometric*** lithium tantalum oxide at deep UV wavelength of 257 nm)

IT 7439-95-4, Magnesium, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(dopant; interband photorefraction in pure and magnesium-doped near- ***stoichiometric*** lithium tantalum oxide at deep UV wavelength of 257 nm)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(7) Furukawa, Y; Jap J of Appl Phys 1999, V38, P1816 CAPLUS
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(9) Ryf, R; Opt Lett 2001, V26, P1666 CAPLUS

L5 ANSWER 3 OF 11 CAPLUS

AN 2004:898812 CAPLUS <<LOGINID::20061206>>

DN 141:373802

ED Entered STN: 28 Oct 2004

TI Ferroelectric materials and their 2-color holographic memory media and wave ***filter***

IN Hatano, Hideki; Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masru; Furukawa, Yasunori

PA Pioneer Electronic Corp., Japan; Toshiba Denko Co., Ltd.; Oxide Corporation

SO Jpn. Kokai Tokkyo Koho, 21 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C30B029-30
ICS C01G035-00; G02B001-02; G02B005-28; G03H001-02

CC 76-8 (Electric Phenomena)

FAN.CNT 1

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PI	JP 2004300015	A2	20041028	JP 2004-40215	20040217
	US 2004234867	A1	20041125	US 2004-798974	20040312
PRAI	JP 2003-69897	A	20030314		
	JP 2004-40215	A	20040217		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004300015	ICM	C30B029-30
	ICS	C01G035-00; G02B001-02; G02B005-28; G03H001-02
	IPCI	C30B0029-30 [ICM,7]; C30B0029-10 [ICM,7,C*];

C01G0035-00 [ICS,7]; G02B0001-02 [ICS,7]; G02B0001-00
[ICS,7,C*]; G02B0005-28 [ICS,7]; G03H0001-02 [ICS,7]
IPCR G03H0001-02 [I,A]; G03H0001-02 [I,C*]; G03H0001-26
[I,A]; G03H0001-26 [I,C*]
FTERM 2H048/GA03; 2H048/GA13; 2H048/GA33; 2H048/GA60;
2H048/GA62; 2K008/AA04; 2K008/BB05; 2K008/DD23;
2K008/EE01; 2K008/FF17; 2K008/HH01; 2K008/HH06;
2K008/HH13; 2K008/HH18; 2K008/HH26; 2K008/HH28;
4G048/AA04; 4G048/AB01; 4G048/AB02; 4G048/AB05;
4G048/AC02; 4G048/AD07; 4G048/AE05; 4G077/AA02;
4G077/AB04; 4G077/CF10; 4G077/EC07; 4G077/HA11

US 2004234867 IPCI G03H0001-02 [ICM,7]
IPCR G02B0005-28 [I,C*]; G02B0005-28 [I,A]; C01G0035-00
[I,C*]; C01G0035-00 [I,A]; C30B0029-10 [I,C*];
C30B0029-30 [I,A]; G02B0001-00 [I,C*]; G02B0001-02
[I,A]; G03H0001-02 [I,C*]; G03H0001-02 [I,A];
G03H0001-26 [I,C*]; G03H0001-26 [I,A]
NCL 430/001.000; 359/007.000; 430/002.000
ECLA G03H001/02; G03H001/26; G11B007/0045; G11B007/0065;
G11B007/125L2; G11B007/243

AB The ferroelec. materials whose refractive indexes change by irradn. of 2 lights of different wavelength without redn. treatment nor addn. of impurities comprise single-cryst. Li tantalate (LT) having the compn. of $Li_2O/(Li_2O + Ta_2O_5)$ = 0.4966-0.4995, i.e., near- ***stoichiometric*** (NS) compn. Preferably, the proton concn. in the NSLT single crystal is defined that IR absorption coeff. in the [OH] stretch mode becomes 0-0.15 cm-1. The 2-color holog. memory media contain the NSLT single crystal. The wave ***filter*** contains the NSLT single crystal having .gtoreq.1 refractive index ***gratings*** .

ST near ***stoichiometric*** ***lithium*** ***tantalate*** ferroelec material; two color holog memory ferroelec ***lithium*** ***tantalate*** ; wave ***filter*** ferroelec ***lithium*** ***tantalate*** ; dopant free near ***stoichiometric*** ***lithium*** ***tantalate***

IT Ferroelectric materials
Holographic recording materials
Optical ***filters***
(single-cryst. near- ***stoichiometric*** Li tantalate ferroelec. materials for 2-color holog. memory media and wave ***filter***)

IT 12031-66-2DP, ***Lithium*** ***tantalate*** , near- ***stoichiometric***
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(single-cryst. near- ***stoichiometric*** Li tantalate ferroelec. materials for 2-color holog. memory media and wave ***filter***)

L5 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:674296 CAPLUS <<LOGINID::20061206>>
DN 142:400090
ED Entered STN: 19 Aug 2004
TI Vapor-transport equilibrated near- ***stoichiometric*** ***lithium*** ***tantalate*** for frequency-conversion applications
AU Katz, M.; Route, R. K.; Hum, D. S.; Parameswaran, K. R.; Miller, G. D.; Fejer, M. M.
CS E. L. Ginzton Laboratory, Stanford University, Stanford, CA, 94305-4088, USA
SO Optics Letters (2004), 29(15), 1775-1777
CODEN: OPLEDP; ISSN: 0146-9592
PB Optical Society of America
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Near- ***stoichiometric*** ***lithium*** ***tantalate*** (SLT) crystals were produced from congruent ***lithium*** ***tantalate*** by a vapor-transport equilibration process. Because of the resultant increase in photocond. and redn. in photogalvanism, the crystals showed no observable photorefractive damage at 514.5 nm up to the highest intensity used, 2 MW/cm2. The crystals also exhibited low green-induced IR absorption, a Curie temp. of 693 .degree.C, and a coercive field of 80 V/mm. The SLT samples were periodically poled with an 8-.mu.m-period ***grating*** , permitting first-order quasi-phase-matched

second-harmonic generation of 532-nm radiation at 43 .degree.C. A 17-mm-long sample generated 1.6 W of continuous-wave output power at 532 nm for 50 h. With 150-ns pulses at a 100-kHz repetition rate in the same sample, 5-W av.-power, 532-nm radiation was generated for 1000 h. No damage to the crystal and no aging effects were obsd. during these expts.
ST vapor transport equilibrated near ***stoichiometric*** ***lithium*** ***tantalate*** frequency conversion
IT Curie temperature (ferroelectric)
Light
Nonlinear optical properties
Photoconductivity
Photorefractive effect
Second-harmonic generation
(vapor-transport equilibrated near- ***stoichiometric*** ***lithium*** ***tantalate*** for frequency-conversion applications)
IT Mass transfer
(vapor; vapor-transport equilibrated near- ***stoichiometric*** ***lithium*** ***tantalate*** for frequency-conversion applications)
IT 12769-51-6, ***Lithium*** tantalum oxide
RL: DEV (Device component use); USES (Uses)
(***lithium*** ***tantalate*** ; vapor-transport equilibrated near- ***stoichiometric*** ***lithium*** ***tantalate*** for frequency-conversion applications)
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L5 ANSWER 5 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:257817 CAPLUS <<LOGINID::20061206>>
DN 141:250441
ED Entered STN: 29 Mar 2004
TI Sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***

AU Dittrich, Philipp; Montemezzani, Germano; Habu, Masayuki; Matsukura, Makoto; Takekawa, Shunji; Kitamura, Kenji; Gunter, Peter
CS Swiss Federal Institute of Technology, Institute of Quantum Electronics, Nonlinear Optics Laboratory, ETH Honggerberg, Zurich, CH-8093, Switz.

SO Optics Communications (2004), 234(1-6), 131-136
CODEN: OPCOB8; ISSN: 0030-4018
PB Elsevier Science B.V.
DT Journal
LA English

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Doping of near ***stoichiometric*** Li tantalate with Mg leads to enhanced interband photorefractive effects compared with undoped crystals. Studies are performed at the deep UV wavelength .lambda.UV = 257 nm by Bragg diffraction expts. The formation of 2 ***grating*** components with a destructive mutual phase shift is obsd. For UV light intensities larger than .apprx.500 mW/cm2 the typical time const. for the response of the interband ***grating*** is faster than 1 ms. The authors also obsd. quasi-fixing of holog. ***gratings*** with UV light and nondestructive, optically switchable readout at the wavelength .lambda.HeNe = 632.8 nm.

ST magnesium doped ***lithium*** ***tantalate*** submillisecond interband photorefraction; UV visible spectra magnesium doped ***lithium*** ***tantalate*** ; diffraction ***grating*** holog

magnesium doped ***lithium*** ***tantalate***
IT Photorefractive effect
(interband; sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***)
IT Holographic diffraction ***gratings***
Optical diffraction
UV and visible spectra
(of magnesium doped ***lithium*** ***tantalate***)
IT 1309-48-4, Magnesium oxide (MgO), properties 7439-95-4, Magnesium, properties 22537-22-0, Magnesium 2+, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(LiTaO3 contg.; sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***)
IT 12031-66-2, ***Lithium*** ***tantalate*** (LiTaO3)
RL: PRP (Properties)
(Mg-doped; sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(7) Dittrich, P; J Opt Soc Am B, in press
(8) Furukawa, Y; J Cryst Growth 1999, V197, P889 CAPLUS
(9) Furukawa, Y; Jpn J Appl Phys 1999, V38, P1816 CAPLUS
(10) Imbrock, J; J Opt Soc Am B 1999, V16, P1392 CAPLUS
(11) Jazbinsek, M; Appl Phys B 2002, V75, P891 CAPLUS
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L5 ANSWER 6 OF 11 CAPLUS
AN 2004:185038 CAPLUS <<LOGINID::20061206>>
DN 141:78611
ED Entered STN: 08 Mar 2004
TI Deep-ultraviolet interband photorefraction in ***lithium*** ***tantalate***
AU Dittrich, Philipp; Koziarska-Glinka, Bozena; Montemezzani, Germano; Gunter, Peter; Takekawa, Shunji; Kitamura, Kenji; Furukawa, Yasunori
CS Swiss Federal Institute of Technology, Institute of Quantum Electronics, Nonlinear Optics Laboratory, ETH Honggerberg, Zurich, CH-8093, Switz.
SO Journal of the Optical Society of America B: Optical Physics (2004), 21(3), 632-639
CODEN: JOBPDE; ISSN: 0740-3224
PB Optical Society of America
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Interband photorefraction in near- ***stoichiometric*** ***lithium*** ***tantalate*** is demonstrated and investigated at the deep-UV wavelength .lambda.UV=257 nm. Formation of two distinct ***grating*** components is directly obsd. in depth-resolved measurements. The diffraction efficiency of a Bragg ***grating*** is measured as a function of the UV light intensity, the ***grating*** spacing, and the depth of the readout beam beneath the crystal surface. Typical time consts. for the interband effects are of the order of a few tens of milliseconds for UV light intensities of approx. 100 mW/cm2, 3 orders of magnitude faster than the time consts. reported previously for ***lithium*** ***tantalate*** .
ST UV interband photorefraction ***lithium*** ***tantalate***
IT Holography
Optical diffraction
Photorefractive effect
(deep-UV interband photorefraction in ***lithium***

tantalate)
IT 12031-66-2D, ***Lithium*** ***tantalate*** LiTaO3, near-
stoichiometric
RL: PRP (Properties)
(deep-UV interband photorefraction in ***lithium***
tantalate)
RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(13) Gunter, P; Photorefractive Materials and Their Applications 1988, V1
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L5 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:879031 CAPLUS <<LOGINID::20061206>>
DN 140:243491
ED Entered STN: 10 Nov 2003
TI Infrared holographic recording in ***lithium*** ***tantalate*** crystals by means of the pyroelectric effect
AU Eggert, Helge A.; Imbrock, Joerg; Baeumer, Christoph; Hesse, Hartmut; Kraetzig, Eckhard
CS Fachbereich Physik, Universitaet Osnabrueck, Osnabrueck, 49069, Germany
SO Optics Letters (2003), 28(20), 1975-1977
CODEN: OPLEDP; ISSN: 0146-9592
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB IR holog. recording in a two-step process is demonstrated in ***stoichiometric*** iron-doped ***lithium*** ***tantalate*** crystals. Through absorption of two intersecting IR pulses (.lambda. = 1064 nm) a temp. ***grating*** and thus a modulated pyroelec. field build up. Free electrons, excited by homogeneous light of a shorter wavelength (.lambda. = 532 nm) drift in this field, and a phase hologram is stored that can be read nondestructively. The change in refractive index depends mainly on the absorption coeff. at the wavelength of the recording light and on the intensity of the IR light. The proposed method may be extended to telecommunication wavelengths by choice of suitable dopants.
ST IR holog recording ***lithium*** ***tantalate*** crystal pyroelec effect
IT Absorptivity
Pyroelectricity
Refractive index
(IR holog. recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
IT Holography

(IR; IR holog. recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
IT 12031-66-2, ***Lithium*** ***tantalate*** (LiTaO3)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(iron-doped; IR holog. recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
IT 15438-31-0, Iron(2+), processes
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(***lithium*** ***tantalate*** doped with; IR holog. recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L5 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:395717 CAPLUS <<LOGINID::20061206>>
DN 135:160095
ED Entered STN: 01 Jun 2001
TI Photorefractive multichannel correlator based on ***stoichiometric*** LiTaO3
AU Ryf, R.; Montemezzani, G.; Gunter, P.; Furukawa, Y.; Kitamura, K.
CS Nonlinear Optics Laboratory, Institute of Quantum Electronics, Swiss Federal Institute of Technology, ETH Honggerberg, Zurich, 8093, Switz.
SO Applied Physics B: Lasers and Optics (2001), 72(6), 737-742
CODEN: APBOEM; ISSN: 0946-2171
PB Springer-Verlag
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB The authors demonstrate a Vander Lugt type correlator based on photorefractive ***stoichiometric*** LiTaO3 as the vol. holog. material. Accurate correlator output was obtained for binary phase-modulated input images. The correlator is tested with binary amplitude- and phase-modulated input images. Phase-modulated images show a high-quality correlation, whereas amplitude-modulated images suffer in part from a photorefractive self-focusing effect. Using 100 previously stored holograms as ***filters*** , a rate of 10000 correlations/s are demonstrated. A paraxial theor. anal. of the correlator, giving analytic expressions for the shift invariance, is also described.
ST photorefractive multichannel correlator ***stoichiometric*** ***lithium*** ***tantalate*** holog
IT Holography
Photorefractive materials
(photorefractive multichannel correlator based on ***stoichiometric*** LiTaO3)
IT 12031-66-2, Lithium tantalum oxide (LiTaO3)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(photorefractive multichannel correlator based on ***stoichiometric*** LiTaO3)
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L5 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:317996 CAPLUS <<LOGINID::20061206>>
DN 133:65292
ED Entered STN: 16 May 2000
TI Breakthrough in ferroelectric single crystals for optical applications. Control of nonstoichiometric defects
AU Kitamura, Kenji
CS 13th Lab. Group, Natl. Inst. for Res. in Inorg. Mater., 1-1 Namiki, Tsukuba, 305-0044, Japan
SO Oyo Butsuri (2000), 69(5), 511-517
CODEN: OYBSA9; ISSN: 0369-8009
PB Oyo Butsuri Gakkai
DT Journal; General Review
LA Japanese
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75
AB A review with 37 refs. LiNbO3 and LiTaO3 single crystals are attractive materials for optical modulators, optical switches, integrated EO devices, frequency conversion devices, digital holograms among other devices. However, the conventional crystals which are com. used for SAW ***filters*** have some serious problems in their optical applications. These com. available crystals contain a huge no. of nonstoichiometric defects because of the restriction in the ordinary crystal growth method. The authors grew near- ***stoichiometric*** crystals by a novel crystal growth method and compared various properties of conventional and near- ***stoichiometric*** crystals. The near- ***stoichiometric*** crystals exhibiting excellent properties can lead to a breakthrough in solving the material problems for optical applications. The authors summarize their fundamental properties with the conviction that nonstoichiometry control in such materials plays a key role in property tailoring.
ST review ***lithium*** niobate ***tantalate*** nonstoichiometric crystal defect
IT Crystal growth
Nonlinear optical materials
(breakthrough in ferroelec. single crystals for optical applications)
IT Optical instruments
(nonlinear; breakthrough in ferroelec. single crystals for optical applications)
IT Crystal defects
(nonstoichiometric; breakthrough in ferroelec. single crystals for optical applications)
IT 12031-63-9, Lithium niobate (LiNbO3) 12031-66-2, ***Lithium*** ***tantalate*** (LiTaO3)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(breakthrough in ferroelec. single crystals for optical applications)

L5 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:484873 CAPLUS <<LOGINID::20061206>>
DN 125:154809
ED Entered STN: 15 Aug 1996

TI Preparation of heteroepitaxial LiTaO3 thin films grown by a KrF excimer laser ablation method
AU Kim, S. W.; Yang, C. J.
CS Res. Inst. of Industrial Sci. and Technol., S. Korea
SO RIST Yongu Nonmun (1996), 10(2), 217-224
CODEN: RYNOEQ; ISSN: 1225-486X
PB Research Institute of Industrial Science & Technology
DT Journal
LA Korean
CC 75-1 (Crystallography and Liquid Crystals)
AB LiTaO3 films were successfully grown on Al2O3 single crystal substrate by KrF excimer laser ablation using ***stoichiometric*** LiTaO3 target. The characteristics of LiTaO3 thin films were studied as function of substrate temp., O partial pressure, and laser energy d. With increasing the substrate temp. and O partial pressure, the deposition rate was lowered. However the deposition rate increases with increasing the lasing energy d. The phys. characteristics of the films were highly depended on the deposition condition. Smooth heteroepitaxial LiTaO3 films were able to grown up to 1.2 .mu.m which can be applied to a practical use such as SAW ***filter*** . An optimized parameters in this study were 700.degree. substrate temp., 200 mtorr O partial pressure, and 1.62-2.85 J/cm2 laser energy d. for the LiTaO3 epitaxial films.
ST epitaxy ***lithium*** ***tantalate*** laser ablation
IT Epitaxy
(prepn. of heteroepitaxial ***lithium*** ***tantalate*** thin films grown by laser ablation method)
IT Ablation
(laser-induced, prepn. of heteroepitaxial ***lithium*** ***tantalate*** thin films grown by laser ablation method)
IT 12031-66-2, ***Lithium*** ***tantalate*** (LiTaO3)
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(prepn. of heteroepitaxial ***lithium*** ***tantalate*** thin films grown by laser ablation method)

L5 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1994:310817 CAPLUS <<LOGINID::20061206>>
DN 120:310817
ED Entered STN: 11 Jun 1994
TI Epitaxial growth of LiNbO3 optical-waveguide films by excimer laser ablation
AU Haruna, M.; Tsutsumi, J.; Segawa, Y.; Nishihara, H.
CS Fac. Eng., Osaka Univ., Suita, 565, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (1994), 2045(Laser-Assisted Fabrication of Thin Films and Microstructures), 133-40
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75
AB The epitaxial growth of LiNbO3 films by the ArF excimer laser ablation forms electrooptic (EO) thin-film waveguides on Al2O3 and LiTaO3 c-plates. The x-ray diffraction spectra indicate that the resulting films are oriented along the c axis when a Li-rich LiNbO3 ceramics is used as the target. The chem. compn. of the film was evaluated by measurement of the extraordinary index ne from the guided-wave excitation with prism couplers. ***Stoichiometric*** films are grown on both Al2O3 and LiTaO3 c-plates by changing the content of excess Li2O in the target. The propagation loss of 6 dB/cm was attained in the thin-film waveguide on LiTaO3 c-plate. The electrooptical effect of the film was roughly estd. by fabrication and characterization of a light deflector with an EO ***grating*** .
ST lithium niobate waveguide laser ablation epitaxy
IT Laser radiation
(epitaxial growth of lithium niobate optical waveguide films by ablation using)
IT Electrooptical effect
(in lithium niobate optical waveguide films grown by excimer laser ablation)
IT Epitaxy
(of lithium niobate optical waveguide films by excimer laser ablation)

```
IT   Ablation
        (laser-induced, epitaxial growth of lithium niobate optical waveguide
        films by)
IT   Waveguides
        (optical, lithium niobate films, epitaxial growth of, by ablation)
IT   12031-63-9D, Lithium niobate (LiNbO3), lithium-excess
     RL: USES (Uses)
        (epitaxial growth of lithium niobate optical waveguide films by excimer
        laser ablation of)
IT   1313-96-8, Niobium pentoxide
     RL: USES (Uses)
        (epitaxial growth of lithium niobate optical waveguide films by excimer
        laser ablation of lithium carbonate sintered mixt. with)
IT   12057-24-8, Lithium oxide (Li2O), uses
     RL: USES (Uses)
        (epitaxial growth of lithium niobate optical waveguide films by excimer
        laser ablation of lithium niobate contg.)
IT   554-13-2, Lithium carbonate
     RL: USES (Uses)
        (epitaxial growth of lithium niobate optical waveguide films by excimer
        laser ablation of niobium pentoxide sintered mixt. with)
IT   1344-28-1, Alumina, uses   12031-66-2,   ***Lithium***   ***tantalate***
     (LiTaO3)
     RL: USES (Uses)
        (epitaxial growth of lithium niobate optical waveguide films on, by
        excimer laser ablation)
IT   12031-63-9, Lithium niobate (LiNbO3)
     RL: USES (Uses)
        (optical waveguide films, epitaxial growth of, by excimer laser
        ablation)


=> d his

     (FILE 'HOME' ENTERED AT 07:51:05 ON 06 DEC 2006)

     FILE 'CAPLUS' ENTERED AT 07:51:17 ON 06 DEC 2006
L1         3918 S ((LITHIUM(3A)TANTALATE) OR LITA03)
L2          207 S L1 AND STOICHIOMETRIC
L3            8 S L2 AND ((TWO(4W)(WAVELENGTH OR COLOR OR PHOTON)) OR NONVOLATI
L4           10 S L2 AND (((TWO OR 2)(5A)(WAVELENGTH OR COLOR OR PHOTON)) OR NO
L5           11 S L2 AND (FILTER OR GRATING)

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 NEWS  6  SEP 11  CA/CAplus enhanced with more pre-1907 records
 NEWS  7  SEP 21  CA/CAplus fields enhanced with simultaneous left and right
                  truncation
 NEWS  8  SEP 25  CA(SM)/CAplus(SM) display of CA Lexicon enhanced
 NEWS  9  SEP 25  CAS REGISTRY(SM) no longer includes Concord 3D coordinates
 NEWS 10  SEP 25  CAS REGISTRY(SM) updated with amino acid codes for pyrrolysine
 NEWS 11  SEP 28  CEABA-VTB classification code fields reloaded with new
                  classification scheme
 NEWS 12  OCT 19  LOGOFF HOLD duration extended to 120 minutes
 NEWS 13  OCT 19  E-mail format enhanced
 NEWS 14  OCT 23  Option to turn off MARPAT highlighting enhancements available
 NEWS 15  OCT 23  CAS Registry Number crossover limit increased to 300,000 in
                  multiple databases
 NEWS 16  OCT 23  The Derwent World Patents Index suite of databases on STN
                  has been enhanced and reloaded
 NEWS 17  OCT 30  CHEMLIST enhanced with new search and display field
 NEWS 18  NOV 03  JAPIO enhanced with IPC 8 features and functionality
 NEWS 19  NOV 10  CA/CAplus F-Term thesaurus enhanced
 NEWS 20  NOV 10  STN Express with Discover! free maintenance release Version
                  8.01c now available
 NEWS 21  NOV 13  CA/CAplus pre-1967 chemical substance index entries enhanced
                  with preparation role
 NEWS 22  NOV 20  CAS Registry Number crossover limit increased to 300,000 in
                  additional databases
 NEWS 23  NOV 20  CA/CAplus to MARPAT accession number crossover limit increased
                  to 50,000
 NEWS 24  NOV 20  CA/CAplus patent kind codes will be updated
 NEWS 25  DEC 01  CAS REGISTRY updated with new ambiguity codes

 NEWS EXPRESS  NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

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COST IN U.S. DOLLARS                              SINCE FILE     TOTAL
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FULL ESTIMATED COST                                     0.21      0.21

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=> s (lithium(5a)tantalate) or litao3
L1         7828 (LITHIUM(5A) TANTALATE) OR LITAO3

=> s l1 and stoichiomet?
L2          508 L1 AND STOICHIOMET?

=> s l2 and gating
L3            7 L2 AND GATING

=> s l2 and gated
L4            1 L2 AND GATED

=> s l3 or l4
L5            8 L3 OR L4

=> d all 1-8

L5     ANSWER 1 OF 8  INSPEC  (C) 2006 IET on STN
AN     2004:8195502  INSPEC     DN  A2005-01-7820W-001; B2005-01-4110-024 &lt;&lt;LOGINID::20061206&gt;&gt;
TI     Two-color photorefractive properties in near-  ***stoichiometric***
         ***lithium***     ***tantalate***   crystals
AU     Youwen Liu; Kitamura, K.; Takekawa, S.; Nakamura, M.; (Adv. Mater. Lab.,
       Nat. Inst. for Mater. Sci., Ibaraki, Japan), Furukawa, Y.; Hatano, H.
SO     Journal of Applied Physics (15 June 2004), vol.95, no.12, p. 7637-44, 37
       refs.
       CODEN: JAPIAU, ISSN: 0021-8979
       SICI: 0021-8979(20040615)95:12L.7637:CPPN;1-3
       Price: 0021-8979/2004/95(12)/7637(8)/$22.00
       Doc.No.: S0021-8979(04)02212-1
       Published by: AIP, USA
DT     Journal
TC     Experimental
CY     United States
LA     English
AB     The two-color photorefractive properties in undoped as-grown near-
         ***stoichiometric***     ***lithium***     ***tantalate***   crystals
       were investigated, where a near-infrared laser and a cw ultraviolet beam
       were used for writing and   ***gating***   , respectively. The key
       parameters in characterizing two-color photorefractive effect,
       light-induced absorption change, two-color sensitivity, refractive index
       change, readout characteristics, and dark decay were measured by changing
       intensities of   ***gating***   and writing beams, wavelengths of
         ***gating***   and writing beams for the crystals with different near-
         ***stoichiometric***   crystal compositions, and proton concentrations.
       The results showed that there exists an optimal crystal composition of
       around 49.65% for both sensitivity and refractive index change together
       with moderate lifetime of small polarons. The achieved refractive index
       change was on the order of 10-4, and the obtained maximum sensitivity was
       0.18 cm/J. The extrapolated lifetime of holograms at room temperature in
       the crystals without observable OH- absorption was longer than 50 yr. The
       measurements of UV-induced absorption change at room temperature and low
       temperature of 77.3 K suggested that the unintentional impurity of Fe and
       intrinsic defects were responsible for two-color photorefractive effect.
       The excellent two-color photorefractive properties of undoped as-grown
       near-  ***stoichiometric***     ***lithium***     ***tantalate***
       crystals were discussed based on this mechanism and the physical
       properties of   ***lithium***     ***tantalate***
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CC A7820W Other optical properties of condensed matter; A7820D Optical constants and parameters (condensed matter); A6480E Stoichiometry and homogeneity; A4270G Light-sensitive materials; A7840H Visible and ultraviolet spectra of other nonmetals; A7830G Infrared and Raman spectra in inorganic crystals; A6170 Defects in crystals; B4110 Optical materials

CT crystal defects; infrared spectra; iron; lithium compounds; photorefractive effect; polarons; refractive index; ***stoichiometry*** ; ultraviolet spectra

ST photorefractive properties; stoichiometric lithium tantalate crystals; near infrared laser; cw ultraviolet beam; photorefractive effect; light induced absorption change; refractive index change; dark decay; two color sensitivity; writing beams; proton concentrations; polarons lifetime; room temperature; UV induced absorption change; intrinsic defects; physical properties; 293 to 298 K; 77.3 K; 50 yr; LiTaO3:Fe

CHI LiTaO3:Fe ss, LiTaO3 ss, TaO3 ss, Fe ss, Li ss, O3 ss, Ta ss, O ss, Fe el, Fe dop

PHP temperature 2.93E+02 to 2.98E+02 K; temperature 7.73E+01 K; time 1.6E+09 s

ET Fe*O*Ta; Fe sy 3; sy 3; O sy 3; Ta sy 3; TaO3:Fe; Fe doping; doped materials; Ta cp; cp; O cp; O*Ta; TaO; Fe; Li*O*Ta; Li sy 3; LiTaO; Li cp; Li; O; Ta; H*O; OH; OH-; H cp; OH in 1; in 1

L5 ANSWER 2 OF 8 INSPEC (C) 2006 IET on STN

AN 2004:8080300 INSPEC DN A2004-20-4240-008; B2004-10-4350-029 <<LOGINID::20061206>>

TI Two-color holographic recording in nondoped near- ***stoichiometric*** ***lithium*** ***tantalate*** with continuous-wave lasers

AU Youwen Liu; Kitamura, K.; Takekawa, S.; Nakamura, M.; Furukawa, Y.; (Adv. Mater. Laboratory & Nanomaterials Laboratory, Nat. Inst. for Mater. Sci., Ibaraki, Japan), Hatano, H.

SO Ninth International Conference on Photorefractive Effects, Materials and Devices (Trends in Optics and Photonics Series Vol.87), 2003, p. 642-8 of xv+740 pp., 18 refs.
Editor(s): Delaye, P.; Denz, C.; Mager, L.; Montemezzani, G.
ISBN: 1 55752 755 5
Published by: Optical Soc. of America, Washington, DC, USA
Conference: Ninth International Conference on Photorefractive Effects, Materials and Devices, La Colle sur Loup, France, 17-21 June 2003

DT Conference; Conference Article

TC Experimental

CY United States

LA English

AB Nonvolatile two-color holographic recording was demonstrated in as-grown nondoped SLT crystals with a high sensitivity of 0.086 cm/J with a ***gating*** intensity of 1 W/cm2 at 350 nm, a large refractive index change of as much as 1.times.10-4, a high resistance to IR erasure and a long hologram lifetime of five years. Dependences of two-color sensitivity and dynamic range on ***gating*** and writing intensities are presented. The sensitivity can be further enhanced using writing and ***gating*** beams of shorter wavelength without sacrificing readout nonvolatility. 50 plane-wave holograms are angle-multiplexed with M/# of 0.95

CC A4240H Holographic recording; A4280T Optical storage and retrieval; A4270G Light-sensitive materials; A6480E Stoichiometry and homogeneity; A7820W Other optical properties of condensed matter; A7820D Optical constants and parameters (condensed matter); B4350 Holography; B4120 Optical storage and retrieval; B4110 Optical materials

CT holographic storage; lithium compounds; photorefractive effect; photorefractive materials; refractive index; ***stoichiometry***

ST two-color holographic recording; near-stoichiometric lithium tantalate; continuous-wave lasers; SLT crystals; refractive index change; hologram lifetime; two-color sensitivity; gating intensity; writing intensity; angle multiplexing; 350 nm; LiTaO3

CHI LiTaO3 ss, TaO3 ss, Li ss, O3 ss, Ta ss, O ss

PHP wavelength 3.5E-07 m

ET O*Ta; TaO3; Ta cp; cp; O cp; TaO; Li; O; Ta

L5 ANSWER 3 OF 8 INSPEC (C) 2006 IET on STN

AN 2003:7659434 INSPEC DN A2003-15-4240-001; B2003-07-4350-029 <<LOGINID::20061206>>

TI Nonvolatile two-color holographic recording in nondoped near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals with continuous-wave lasers

AU Youwen Liu; Kitamura, K.; Takekawa, S.; Nakamura, M.; Furukawa, Y.;

(Adv. Mater. Lab., Nat. Inst. for Mater. Sci., Ibaraki, Japan), Hatano, H.
SO Applied Physics Letters (16 June 2003), vol.82, no.24, p. 4218-20, 17 refs.
CODEN: APPLAB, ISSN: 0003-6951
SICI: 0003-6951(20030616)82:24L.4218:NCHR;1-W
Price: 01/03/6951/2003/82(24)/4218(3)/$19.00
Doc.No.: S0003-6951(03)03124-3
Published by: AIP, USA
DT Journal
TC Practical; Experimental
CY United States
LA English
AB Nonvolatile holograms have been recorded in nondoped near- ***stoichiometric*** ***LiTaO3*** crystals by use of a near infrared (IR) laser for writing and a ultraviolet beam as a ***gating*** source. This material exhibits good overall two-color holographic recording characteristics including a high sensitivity of 0.086 cm/J with a ***gating*** intensity of 1 W/cm2 at 350 nm, a large refractive index change of as much as 1.times.10-4, a high resistance to IR erasure, and a long hologram lifetime of five years. The sensitivity can be further enhanced using writing and ***gating*** beams of a shorter wavelength without sacrificing readout nonvolatility
CC A4240H Holographic recording; A4280T Optical storage and retrieval; A4240E Holographic optical elements; holographic gratings; A4265M Multiwave mixing; A7820W Other optical properties of condensed matter; A7820D Optical constants and parameters (condensed matter); B4350 Holography; B4120 Optical storage and retrieval; B4340F Optical phase conjugation and multiwave mixing
CT holographic storage; lithium compounds; photorefractive effect; refractive index
ST nonvolatile two-color holographic recording; continuous-wave lasers; nondoped near-stoichiometric LiTaO3 crystals; near infrared laser; ultraviolet beam; writing source; gating source; large refractive index change; 350 nm; LiTaO3
CHI LiTaO3 ss, TaO3 ss, Li ss, O3 ss, Ta ss, O ss
PHP wavelength 3.5E-07 m
ET Li*O*Ta; Li sy 3; sy 3; O sy 3; Ta sy 3; LiTaO3; Li cp; cp; Ta cp; O cp; O*Ta; TaO3; TaO; Li; O; Ta

L5 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:734145 CAPLUS <<LOGINID::20061206>>
DN 141:215455
ED Entered STN: 09 Sep 2004
TI Nonvolatile photorefractive memory
AU Hatano, Hideki; Liu, Youwen; Kitamura, Kenji
CS Corporate R&D Laboratories Pioneer, Japan
SO Optronics (2004), 272, 111-117
CODEN: OPUTDD; ISSN: 0286-9659
PB Oputoronikususha
DT Journal; General Review
LA Japanese
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB A review of of the nonvolatile photorefractive recording process using the photon- ***gated*** two-color holog. in LiNbO3 and ***LiTaO3*** , which supersedes the longstanding issue of destructive readout. Substantial progress has been made in recent years by the development of crystal growth and energy-band tailoring technologies on near- ***stoichiometric*** single crystals. The best performance was obtained in near- ***stoichiometric*** ***LiTaO3*** .
ST review nonvolatile photorefractive memory
IT Memory effect
(optical, photorefractive; nonvolatile photorefractive memory)

L5 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:463034 CAPLUS <<LOGINID::20061206>>
DN 141:181874
ED Entered STN: 09 Jun 2004
TI Two-color photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals

AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masaru;
Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory, National Institute for Materials Science,
1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan
SO Journal of Applied Physics (2004), 95(12), 7637-7644
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 73, 76
AB The two-color photorefractive properties in undoped as-grown near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals were investigated, where a near-IR laser and a cw UV beam were used for writing and ***gating*** , resp. The key parameters in characterizing two-color photorefractive effect, light-induced absorption change, two-color sensitivity, refractive index change, readout characteristics, and dark decay were measured by changing intensities of ***gating*** and writing beams, wavelengths of ***gating*** and writing beams for the crystals with different near- ***stoichiometric*** crystal compns., and proton concns. The results showed that there exists an optimal crystal compn. of around 49.65% for both sensitivity and refractive index change together with moderate lifetime of small polarons. The achieved refractive index change was on the order of 10-4, and the obtained max. sensitivity was 0.18 cm/J. The extrapolated lifetime of holograms at room temp. in the crystals without observable OH- absorption was longer than 50 yr. The measurements of UV-induced absorption change at room temp. and low temp. of 77.3 K suggested that the unintentional impurity of Fe and intrinsic defects were responsible for two-color photorefractive effect. The excellent two-color photorefractive properties of undoped as-grown near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals were discussed based on this mechanism and the phys. properties of ***lithium*** ***tantalate*** .
ST two color photorefractive near ***stoichiometric*** ***lithium*** ***tantalate*** holog
IT Refractive index
(changes of near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT Curie temperature (ferroelectric)
IR spectra
Optical recording
UV and visible spectra
(of near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT Polaron
(polaron lifetime of near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT Holography
(two-color holog. recording in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT Crystal defects
Photorefractive effect
(two-color photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT 7439-96-5, Manganese, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(two-color photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT 7439-89-6, Iron, properties
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)
(two-color photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
IT 12031-66-2D, ***Lithium*** ***tantalate*** (***LiTaO3***), near ***stoichiometric***
RL: PRP (Properties)
(two-color photorefractive properties in near- ***stoichiometric*** ***lithium*** ***tantalate*** crystals)
RE.CNT 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L5 ANSWER 6 OF 8 CAPLUS
AN 2004:397282 CAPLUS <<LOGINID::20061206>>
DN 142:143937
ED Entered STN: 17 May 2004
TI Nonvolatile holographic storage in near- ***stoichiometric***
LiTaO3 crystals
AU Liu, Y.; Kitamura, K.; Takekawa, S.; Nakamura, M.; Furukawa, Y.; Hatano,
H.
CS Nanomaterials Laboratory, National Institute for Materials Science,
Tsukuba, Ibaraki, 305-0044, Japan
SO Trends in Optics and Photonics (2003), 88(Conference on Lasers and
Electro-Optics (CLEO), 2003), CWA25/1-CWA25/2
CODEN: TOPRBS
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB Nonvolatile holograms have been recorded in non doped near-
stoichiometric ***LiTaO3*** crystal of 2 mm-thickness. High
sensitivity of 0.067 cm/J and large M/# of 1.59 are achieved
simultaneously for ***gating*** intensity of 0.31 W/cm2 and writing
intensity of 12.8 W/cm2.
ST nonvolatile holog storage near ***stoichiometric*** ***lithium***
tantalate crystal; holog recording near ***stoichiometric***
lithium ***tantalate*** crystal
IT Holographic recording materials
Holography
(nonvolatile holog. storage in near- ***stoichiometric***
LiTaO3 crystals)
IT 12031-66-2D, ***Lithium*** ***tantalate*** (***LiTaO3***),
near- ***stoichiometric***
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); PROC (Process)

(nonvolatile holog. storage in near- ***stoichiometric***
LiTaO3 crystals)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Guenther, H; Appl Opt 1998, V37, P7611 CAPLUS
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L5 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:682977 CAPLUS <<LOGINID::20061206>>
DN 140:189865
ED Entered STN: 02 Sep 2003
TI Two-color holographic recording in nondoped near- ***stoichiometric***
lithium ***tantalate*** with continuous-wave lasers
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masaru;
Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory and Nanomaterials Laboratory, National
Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SO Trends in Optics and Photonics (2003), 87(Photorefractive Effects,
Materials, and Devices), 642-648
CODEN: TOPRBS
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB Nonvolatile two-color holog. recording was demonstrated in as-grown
nondoped SLT crystals with a high sensitivity of 0.086 cm/J with a
gating intensity of 1 W/cm2 at 350 nm, a large refractive index
change of as much as 1.times.10-4, a high resistance to IR erasure and a
long hologram lifetime of five years. Dependences of two-color
sensitivity and dynamic range on ***gating*** and writing intensities
are presented. The sensitivity can be further enhanced using writing and
gating beams of shorter wavelength without sacrificing readout
nonvolatility. 50 Plane-wave holograms are angle-multiplexed with M/# of
0.95.
ST nonvolatile two color holog recording ***lithium*** ***tantalate***
crystal
IT Holographic recording materials
Holography
(nonvolatile two-color holog. recording in as-grown nondoped
lithium ***tantalate*** using continuous-wave lasers)
IT Holographic memory devices
(vol.; nonvolatile two-color holog. recording in as-grown nondoped
lithium ***tantalate*** using continuous-wave lasers in
relation to)
IT 12031-66-2, ***Lithium*** ***tantalate*** (***LiTaO3***)
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); PROC (Process)
(nonvolatile two-color holog. recording in as-grown nondoped
lithium ***tantalate*** using continuous-wave lasers)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(3) Bai, Y; Phys Rev Lett 1997, V78, P2944 CAPLUS
(4) Buse, K; Nature 1998, V393, P665 CAPLUS
(5) Furukawa, Y; J Crystal Growth 1999, V197, P889 CAPLUS
(6) Guenther, H; Appl Opt 1998, V37, P7611 CAPLUS
(7) Hesselink, L; Science 1998, V282, P1089 CAPLUS
(8) Imbrock, J; Opt Lett 1999, V24, P1302 CAPLUS
(9) Kappers, L; Phys Rev B 1985, V31, P6792 CAPLUS
(10) Kogelnik, H; Bell Syst Tech J 1969, V48, P2909
(11) Kratzig, E; Appl Phys 1978, V15, P133
(12) Liu, Y; Appl Phys Lett 2002, V81, P2686 CAPLUS
(13) Liu, Y; Opt Lett 2000, V25, P908 CAPLUS
(14) Mok, F; Opt Lett 1996, V21, P896
(15) Nakamura, M; J Crystal Growth 2002, V245, P267 CAPLUS
(16) Schirmer, O; J Phys Chem Solids 1991, V52, P185 CAPLUS
(17) von der Linde, D; Appl Phys Lett 1974, V25, P155 CAPLUS
(18) Wevering, S; J Opt Soc Am B 2001, V18, P472 CAPLUS

L5 , ANSWER 8 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:458344 CAPLUS <<LOGINID::20061206>>
DN 139:157314
ED Entered STN: 16 Jun 2003
TI Nonvolatile two-color holographic recording in nondoped near-
stoichiometric ***lithium*** ***tantalate*** crystals with
continuous-wave lasers
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masaru;
Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory and Nanomaterials Laboratory, National
Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki, 305-0044,
Japan
SO Applied Physics Letters (2003), 82(24), 4218-4220
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB Nonvolatile holograms have been recorded in nondoped near-
stoichiometric ***LiTaO3*** crystals by use of a near-IR laser
for writing and a UV beam as a ***gating*** source. This material
exhibits good overall two-color holog. recording characteristics including
a high sensitivity of 0.086 cm/J with a ***gating*** intensity of 1
W/cm2 at 350 nm, a large refractive index change of as much as
1.times.10-4, a high resistance to IR erasure, and a long hologram
lifetime of five years. The sensitivity can be further enhanced using
writing and ***gating*** beams of a shorter wavelength without
sacrificing readout nonvolatility.
ST nonvolatile two color holog recording ***stoichiometric***
lithium ***tantalate*** crystal
IT Holography
(nonvolatile two-color holog. recording in nondoped near-
stoichiometric ***lithium*** ***tantalate*** crystals
with continuous-wave)
IT Holographic recording materials
(nonvolatile two-color holog. recording in nondoped near-
stoichiometric ***lithium*** ***tantalate*** crystals
with continuous-wave lasers)
IT 12031-66-2, ***Lithium*** ***tantalate*** (***LiTaO3***)
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); PROC (Process)
(nonvolatile two-color holog. recording in nondoped near-
stoichiometric ***lithium*** ***tantalate*** crystals
with continuous-wave lasers)
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bai, Y; Phys Rev Lett 1997, V78, P2944 CAPLUS
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(3) Buse, K; Nature (London) 1998, V393, P665 CAPLUS
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(6) Guenther, H; Appl Opt 1998, V37, P7611 CAPLUS
(7) Hesselink, L; Science (Washington, DC, U S) 1998, V282, P1089 CAPLUS
(8) Imbrock, J; Opt Lett 1999, V24, P1302 CAPLUS
(9) Kappers, L; Phys Rev B 1985, V31, P6792 CAPLUS
(10) Kogelnik, H; Bell Syst Tech J 1969, V48, P2909
(11) Kratzig, E; Appl Phys 1978, V15, P133
(12) Liu, Y; Appl Phys Lett 2002, V81, P2686 CAPLUS
(13) Liu, Y; Opt Lett 2000, V25, P908 CAPLUS
(14) Mok, F; Opt Lett 1996, V21, P896
(15) Schirmer, O; J Phys Chem Solids 1991, V52, P185 CAPLUS
(16) Von der Linde, D; Appl Phys Lett 1974, V25, P155 CAPLUS
(17) Wevering, S; J Opt Soc Am B 2001, V18, P472 CAPLUS

=> d his

(FILE 'HOME' ENTERED AT 08:00:29 ON 06 DEC 2006)

FILE 'INSPEC, CAPLUS' ENTERED AT 08:00:40 ON 06 DEC 2006

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L1          7828 S (LITHIUM(5A)TANTALATE) OR LITAO3
L2           508 S L1 AND STOICHIOMET?
L3             7 S L2 AND GATING
L4             1 S L2 AND GATED
L5             8 S L3 OR L4

=> s l1 and hologra?
L6          178 L1 AND HOLOGRA?

=> s l6 and stable
L7            1 L6 AND STABLE

=> s l6 and voltile
L8            0 L6 AND VOLTILE

=> s l6 and volatile
L9            2 L6 AND VOLATILE

=> s l6 and (wavelength or color)
L10          42 L6 AND (WAVELENGTH OR COLOR)

=> s l7 or l9
L11           3 L7 OR L9

=> d all 1-3

L11    ANSWER 1 OF 3  INSPEC  (C) 2006 IET on STN
AN     2005:8295436  INSPEC     DN  A2005-07-4240-009; B2005-04-4350-007 <<LOGINID::20061206>>
TI     Long lifetime of two-color nonvolatile   ***holograms***   in
       near-stoichiometric   ***lithium***     ***tantalate***   crystals
AU     Kitamura, K.; Youwen Liu; Takekawa, S.;  (Adv. Mater. Lab., Nat. Inst.
       for Mater. Sci., Ibaraki, Japan), Hatano, H.; Furukawa, Y.
SO     Proceedings of the SPIE - The International Society for Optical
       Engineering (2004), vol.5362, no.1, p. 107-10, 15 refs.
       CODEN: PSISDG, ISSN: 0277-786X
       SICI: 0277-786X(2004)5362:1L.107:LLCN;1-P
       Price: 0277-786X/04/$15.00
       Published by: SPIE-Int. Soc. Opt. Eng, USA
       Conference: Advanced Optical and Quantum Memories and Computing, San
       Jose, CA, USA, 27-28 Jan. 2004
DT     Conference; Conference Article; Journal
TC     Practical; Experimental
CY     United States
LA     English
AB     Two-color   ***holography***   is an effective solution to the
         ***volatile***   readout problem in volume   ***holographic***   data
       storage based on photorefractive materials. Popular materials for
       two-color   ***holography***   are reduced doped and nondoped
       near-stoichiometric lithium niobate crystals. However, the lifetime at
       room temperature is from several weeks to several months depending on the
       reduction state of the material. Moreover, reductive treatment will
       degrade the nonvolatility of two-color   ***holograms***   . The important
       issue for two-color   ***holography***   is how to increase the lifetime.
       In this contribution, lifetimes of two-color nonvolatile
         ***holograms***   recorded in as-grown near-stoichiometric
         ***lithium***   niobate and   ***tantalate***   crystals were compared by
       extrapolating the high-temperature data. The dark-decay time constants
       obey an Arrhenius dependence on absolute temperature and yield activity
       energy of 1.06 eV around in all measured crystals. Lifetimes of
         ***holograms***   in nondoped and slightly doped crystals depend on the
       proton concentration. Lifetimes of   ***hologram***   in   ***lithium***
         ***tantalate***   are one order of magnitude longer than those in lithium
       niobate at the same proton concentration. The lifetime of two-color
         ***holograms***   in lithium tantalite is longer than 20 years
CC     A4240H Holographic recording; A4280T Optical storage and retrieval;
       A4270Y Other optical materials; A6480E Stoichiometry and homogeneity;
       B4350 Holography; B4120 Optical storage and retrieval; B4110 Optical
       materials; B0290F Interpolation and function approximation (numerical
       analysis)
CT     extrapolation;   ***holographic***   storage; lithium compounds; optical
       materials; protons; stoichiometry; tantalum compounds
ST     two-color nonvolatile hologram lifetime; near-stoichiometric lithium
```

tantalate crystal; hologram recording; proton concentration; extrapolation; dark decay time constant; Arrhenius dependence; OH-absorption; holographic data storage; 1.06 eV; LiTaO3
CHI LiTaO3 ss, TaO3 ss, Li ss, O3 ss, Ta ss, O ss
PHP electron volt energy 1.06E+00 eV
ET O*Ta; TaO3; Ta cp; cp; O cp; TaO; Li; O; Ta

L11 ANSWER 2 OF 3 INSPEC (C) 2006 IET on STN
AN 2002:7196285 INSPEC DN A2002-07-4265J-009; B2002-04-4340J-003 <<LOGINID::20061206>>
TI ***Stable*** oscillating nonlinear beams in square-wave-biased-photorefractives
AU Tosi-Beleffi, G.M.; Presi, M.; (Ist. Nazionale Fisica della Materia, Rome, Italy), DelRe, E.; Boschi, D.; Palma, C.
SO Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest (IEEE Cat. No.01CH37170), 2001, p. 429-30 of 604+72 post deadline papers pp., 3 refs.
ISBN: 1 55752 662 1
Published by: Opt. Soc. America, Washington, DC, USA
Conference: CLEO 2001. Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest, Baltimore, MD, USA, 6-11 May 2001
Sponsor(s): IEEE/Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America; Quantum Electron. Division of the Eur. Phys. Soc.; Opt. Soc. Japanese Quantum Electron. Joint Group
DT Conference; Conference Article
TC Experimental
CY United States
LA English
AB Summary form only given. Optical micrometer sized beams in biased photorefractives self-trap in a transient regime, reaching steady-state by increasing the sample conductivity. We investigate a fundamentally different stabilization process connected to beam behaviour in a non-stationary external bias field. We study beam evolution in the presence of an alternating field in centrosymmetric potassium- ***lithium*** - ***tantalate*** -niobate (KLTN)
CC A4265J Beam trapping, self focusing, thermal blooming, and related effects; A4265S Optical solitons; A4270G Light-sensitive materials; A7820J Electro-optical effects (condensed matter); B4340J Optical self-focusing and related effects; B4340S Optical solitons; B4110 Optical materials
CT electro-optical effects; lithium compounds; optical self-focusing; optical solitons; photorefractive materials; potassium compounds
ST centrosymmetric (K,Li)(Ta,Nb)O3; stable oscillating nonlinear beams; square-wave-biased-photorefractives; beam behaviour stabilization; nonstationary external bias field; beam evolution; alternating field; beam self-trapping process; slab solitons; beam charge separation; electro-holographic effects; electric field polarity; quadratic electro-optic response; KLiTaO3NbO3
CHI KLiTaO3NbO3 ss, NbO3 ss, TaO3 ss, Li ss, Nb ss, O3 ss, Ta ss, K ss, O ss
ET (K,Li); K r; K Li; Ta; Nb; Nb*O*Ta; Nb sy 3; sy 3; O sy 3; Ta sy 3; TaO3NbO3; Ta cp; cp; O cp; Nb cp; TaO3NbO; Nb*O; NbO; O*Ta; TaO; Li; O

L11 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1114096 CAPLUS <<LOGINID::20061206>>
DN 145:113254
ED Entered STN: 18 Oct 2005
TI Long lifetime of two-color nonvolatile ***holograms*** in near-stoichiometric ***lithium*** ***tantalate*** crystals
AU Kitamura, Kenji; Liu, Youwen; Takekawa, Shunji; Hatano, Hideki; Furukawa, Yasunori
CS Adv. Mater. Lab., National Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2004), 5362(Advanced Optical and Quantum Memories and Computing), 107-110
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Two-color ***holog*** . is an effective soln. to the ***volatile***

readout problem in vol. ***holog*** . data storage based on photorefractive materials. Popular materials for two-color ***holog*** , are reduced doped and nondoped near-stoichiometric lithium niobate crystals. However, the lifetime at room temp. is from several weeks to several months depending on the redn. state of the material. Moreover, reductive treatment will degrade the nonvolatility of two-color ***holograms*** . The important issue for two-color ***holog*** . is how to increase the lifetime. In this contribution, lifetimes of two-color nonvolatile ***holograms*** recorded in as-grown near-stoichiometric ***lithium*** niobate and ***tantalate*** crystals were compared by extrapolating the high-temp. data. The dark-decay time consts. obey an Arrhenius dependence on abs. temp. and yield activity energy of 1.06 eV around in all measured crystals. Lifetimes of ***holograms*** in nondoped and slightly doped crystals depend on the proton concn. Lifetimes of ***hologram*** in ***lithium*** ***tantalate*** are one order of magnitude longer than those in lithium niobate at the same proton concn. The lifetime of two-color ***holograms*** in lithium tantalite is longer than 20 years.

ST long lifetime color nonvolatile ***holograms*** near stoichiometric ***lithium*** ***tantalate***

IT ***Holographic*** memory devices
Holographic recording materials
Photorefractive materials
(long lifetime of two-color nonvolatile ***holograms*** in near-stoichiometric ***lithium*** ***tantalate*** crystals)

IT 12031-66-2, ***Lithium*** ***tantalate*** (***LiTaO3***)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(long lifetime of two-color nonvolatile ***holograms*** in near-stoichiometric ***lithium*** ***tantalate*** crystals)

IT 14280-30-9, Hydroxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(long lifetime of two-color nonvolatile ***holograms*** in near-stoichiometric ***lithium*** ***tantalate*** crystals)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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=> d his

     (FILE 'HOME' ENTERED AT 08:00:29 ON 06 DEC 2006)

     FILE 'INSPEC, CAPLUS' ENTERED AT 08:00:40 ON 06 DEC 2006
L1          7828 S (LITHIUM(5A)TANTALATE) OR LITAO3
L2           508 S L1 AND STOICHIOMET?
L3             7 S L2 AND GATING
L4             1 S L2 AND GATED
L5             8 S L3 OR L4
L6           178 S L1 AND HOLOGRA?
L7             1 S L6 AND STABLE
L8             0 S L6 AND VOLTILE
L9             2 S L6 AND VOLATILE
L10           42 S L6 AND (WAVELENGTH OR COLOR)
L11            3 S L7 OR L9

=> l10 not (l11 or l5)
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L10 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l10 not (l11 or l5)
L12          33 L10 NOT (L11 OR L5)

=> d all 1-33

L12    ANSWER 1 OF 33  INSPEC  (C) 2006 IET on STN
AN     2006:8803412  INSPEC &lt;&lt;LOGINID::20061206&gt;&gt;
TI     Near-stoichiometric and Mg-doped   ***LiTaO3***   for fast interband
       photorefraction
AU     Dittrich, Ph.; Juvalta F; Montemezzani, G.; Jazbinsek, M.; Gunter, P.;
       (Nonlinear Opt. Lab., Swiss Fed. Inst. of Technol., Zurich, Switzerland),
       Kitamura, K.; Furukawa, Y.
SO     2005 Conference on Lasers and Electro-Optics Europe (IEEE Cat. No.
       05TH8795), 2005, p. 193 of xxxii+722 pp., 2 refs.
       ISBN: 0 7803 8974 3
       Price: 0 7803 8974 3/2005/$20.00
       Published by: IEEE, Piscataway, NJ, USA
       Conference: 2005 Conference on Lasers and Electro-Optics Europe, Munich,
       Germany, 12-17 June 2005
DT     Conference; Conference Article
TC     Experimental
CY     United States
LA     English
AB     In this paper, interband photorefraction was demonstrated in
       near-stoichiometric   ***LiTaO3***   at the deep ultraviolet
         ***wavelength***   .lambda.UV= 257 nm. The photoconductivity of
       near-stoichiometric   ***LiTaO3***   at this   ***wavelength***   was
       determined, and Bragg diffraction was investigated. The formation of two
       distinct grating components, which are most likely associated with free
       carriers on the one hand and deep traps on the other hand, was observed
       in depth-resolved measurements. We demonstrate that by controlling the
       stoichiometry the response time and dynamic range of the interband
       photorefractive effect can be very much improved. Measured time constants
       were in the order of a few tens of milliseconds for UV light intensities
       of about 100 mW/cm2, three orders of magnitude faster than time constants
       reported previously for conventional photorefraction in
       near-stoichiometric   ***LiTaO3***   at 364 nm
CC     A4240E Holographic optical elements; holographic gratings; A4270G
       Light-sensitive materials; A6480E Stoichiometry and homogeneity; A7240
       Photoconduction and photovoltaic effects; photodielectric effects; A4280F
       Gratings, echelles; B4350 Holography
CT     Bragg gratings;   ***holographic***   gratings; lithium compounds;
       magnesium; photoconductivity; photorefractive materials; stoichiometry
ST     stoichiometry; Mg-doped LiTaO3; interband photorefraction;
       photoconductivity; Bragg diffraction; grating components; depth-resolved
       measurements; 257 nm; 364 nm; LiTaO3:Mg
CHI    LiTaO3:Mg ss, LiTaO3 ss, TaO3 ss, Li ss, Mg ss, O3 ss, Ta ss, O ss, Mg
       el, Mg dop
PHP    wavelength 2.57E-07 m; wavelength 3.64E-07 m
ET     Li*O*Ta; Li sy 3; sy 3; O sy 3; Ta sy 3; LiTaO3; Li cp; cp; Ta cp; O cp;
       Mg*O*Ta; Mg sy 3; TaO3:Mg; Mg doping; doped materials; O*Ta; TaO; Mg;
       LiTaO; Li; O; Ta

L12    ANSWER 2 OF 33  INSPEC  (C) 2006 IET on STN
AN     2005:8306480  INSPEC     DN  A2005-08-4240-001; B2005-04-4350-029 &lt;&lt;LOGINID::20061206&gt;&gt;
TI     Comparison of two-  ***color***    ***hologram***   lifetimes of
       near-stoichiometric   ***lithium***   niobate and of   ***tantalate***
       crystals
AU     Youwen Liu; Kitamura, K.; Takekawa, S.; Ravi, G.; Nakamura, M.; Furukawa,
       Y.;  (Adv. Mater. Lab., Nat. Inst. for Mater. Sci., Ibaraki, Japan),
       Hatano, H.
SO     Applied Optics (1 Nov. 2004), vol.43, no.31, p. 5778-83, 29 refs.
       CODEN: APOPAI, ISSN: 0003-6935
       SICI: 0003-6935(20041101)43:31L.5778:CCHL;1-N
       Price: 0003-6935/04/315778-06$15.00/0
       Published by: Opt. Soc. America, USA
DT     Journal
```

TC Experimental
CY United States
LA English
AB Lifetimes of two- ***color*** nonvolatile ***holograms*** recorded in undoped or in slightly doped near-stoichiometric ***lithium*** niobate and ***tantalate*** crystals were measured and compared by extrapolation of the high-temperature data. A proton-compensation mechanism dominated the dark decay and yielded similar activation energies, of 1.05 and 1.10 eV, for near-stoichiometric ***lithium*** niobate and ***tantalate*** crystals, respectively. The lifetime of ***holograms*** in ***lithium*** ***tantalate*** was 1 order of magnitude longer than that in lithium niobate with the same proton concentration, which was consistent with our theoretical estimation. The projected lifetime of two- ***color*** ***holograms*** in ***lithium*** ***tantalate*** without observable OH- absorption is longer than 50 years
CC A4240H Holographic recording; A4270G Light-sensitive materials; A6480E Stoichiometry and homogeneity; B4350 Holography; B4110 Optical materials
CT compensation; ***holographic*** storage; lithium compounds; photorefractive materials; stoichiometry
ST two-color hologram lifetimes; near-stoichiometric lithium niobate; lithium tantalate crystals; proton-compensation mechanism; dark decay; activation energies; proton concentration; OH- absorption; 1.05 eV; 1.10 eV; LiNbO3; LiTaO3
CHI LiNbO3 ss, NbO3 ss, Li ss, Nb ss, O3 ss, O ss; LiTaO3 ss, TaO3 ss, Li ss, O3 ss, Ta ss, O ss
PHP electron volt energy 1.05E+00 eV; electron volt energy 1.1E+00 eV
ET Nb*O; NbO3; Nb cp; cp; O cp; O*Ta; TaO3; Ta cp; NbO; Li; Nb; O; TaO; Ta; H*O; OH; OH-; H cp; OH in 1; in 1

L12 ANSWER 3 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:8063098 INSPEC DN A2004-19-4240E-002; B2004-09-4110-094 <<LOGINID::20061206>>
TI Sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***
AU Dittrich, P.; Montemezzani, G.; (Inst. of Quantum Electron., Swiss Fed. Inst. of Technol., Zurich, Switzerland), Habu, M.; Matsukura, M.; Takekawa, S.; Kitamura, K.; Gunter, P.
SO Optics Communications (15 April 2004), vol.234, no.1-6, p. 131-6, 18 refs.
CODEN: OPCOB8, ISSN: 0030-4018
SICI: 0030-4018(20040415)234:1/6L.131:MIPM;1-I
Price: 0030-4018/04/$30.00
Published by: Elsevier, Netherlands
DT Journal
TC Experimental
CY Netherlands
LA English
AB We show that doping of near stoichiometric ***lithium*** ***tantalate*** with magnesium leads to enhanced interband photorefractive effects compared with undoped crystals. Investigations are performed at the deep ultraviolet (UV) ***wavelength*** .lambda. = 257 nm by Bragg diffraction experiments. The formation of two grating components with a destructive mutual phase shift is observed. For UV light intensities larger than about 500 mW/cm2 the typical time constant for the response of the interband grating is faster than one millisecond. We also observed quasi-fixing of ***holographic*** gratings with UV light and nondestructive, optically switchable readout at the ***wavelength*** .lambda.HeNe = 632.8 nm
CC A4240E Holographic optical elements; holographic gratings; A4240H Holographic recording; A4270G Light-sensitive materials; A4280F Gratings, echelles; A6170T Doping and implantation of impurities; A7840 Visible and ultraviolet spectra (condensed matter); A6480E Stoichiometry and homogeneity; B4110 Optical materials; B4350 Holography
CT Bragg gratings; doping; ***holographic*** gratings; lithium compounds; magnesium; photorefractive effect; photorefractive materials; stoichiometry; ultraviolet spectra
ST interband photorefraction; near stoichiometric lithium tantalate; doping; Bragg diffraction; holographic grating quasifixing; optically switchable readout; 257 nm; 632.8 nm; LiTaO3:Mg
CHI LiTaO3:Mg ss, LiTaO3 ss, TaO3 ss, Li ss, Mg ss, O3 ss, Ta ss, O ss, Mg el, Mg dop
PHP wavelength 2.57E-07 m; wavelength 6.328E-07 m

ET Mg*O*Ta; Mg sy 3; sy 3; O sy 3; Ta sy 3; TaO3:Mg; Mg doping; doped
materials; Ta cp; cp; O cp; O*Ta; TaO; Mg; Li*O*Ta; Li sy 3; LiTaO; Li
cp; Li; O; Ta

L12 ANSWER 4 OF 33 INSPEC (C) 2006 IET on STN
AN 2004:7897549 INSPEC DN A2004-08-4240-018; B2004-04-4350-052 <<LOGINID::20061206>>
TI Infrared ***holographic*** recording in ***lithium***
tantalate crystals by means of the pyroelectric effect
AU Eggert, H.A.; Imbrock, J.; Baumer, C.; Hesse, H.; Kratzig, E.
(Fachbereich Phys., Osnabruck Univ., Germany)
SO Optics Letters (15 Oct. 2003), vol.28, no.20, p. 1975-7, 11 refs.
CODEN: OPLEDP, ISSN: 0146-9592
SICI: 0146-9592(20031015)28:20L.1975:IHRL;1-D
Price: 0146-9592/03/201975-03$15.00/0
Published by: Opt. Soc. America, USA
DT Journal
TC Experimental
CY United States
LA English
AB Infrared ***holographic*** recording in a two-step process is
demonstrated in stoichiometric iron-doped ***lithium***
tantalate crystals. Through absorption of two intersecting
infrared pulses (.lambda. = 1064 nm) a temperature grating and thus a
modulated pyroelectric field build up. Free electrons, excited by
homogeneous light of a shorter ***wavelength*** (.lambda. = 532 nm)
drift in this field, and a phase ***hologram*** is stored that can be
read nondestructively. The change in refractive index depends mainly on
the absorption coefficient at the ***wavelength*** of the recording
light and on the intensity of the infrared light. The proposed method may
be extended to telecommunication ***wavelengths*** by choice of
suitable dopants
CC A4240H Holographic recording; A4240E Holographic optical elements;
holographic gratings; A4280T Optical storage and retrieval; A4270G
Light-sensitive materials; A7830G Infrared and Raman spectra in inorganic
crystals; A7820D Optical constants and parameters (condensed matter);
B4350 Holography; B4110 Optical materials; B4120 Optical storage and
retrieval
CT ***holographic*** storage; infrared spectra; iron; lithium compounds;
optical materials; optical modulation; pyroelectricity; refractive index
ST infrared holographic recording; pyroelectric effect; stoichiometric
iron-doped lithium tantalate crystals; absorption; intersecting infrared
pulses; temperature grating; modulated pyroelectric field; free
electrons; homogeneous light; phase hologram; refractive index;
absorption coefficient; recording light wavelength; infrared light
intensity; telecommunication wavelengths; 1064 nm; 532 nm; LiTaO3:Fe
CHI LiTaO3:Fe ss, LiTaO3 ss, TaO3 ss, Fe ss, Li ss, O3 ss, Ta ss, O ss, Fe
el, Fe dop
PHP wavelength 1.064E-06 m; wavelength 5.32E-07 m
ET Fe*O*Ta; Fe sy 3; sy 3; O sy 3; Ta sy 3; TaO3:Fe; Fe doping; doped
materials; Ta cp; cp; O cp; O*Ta; TaO; Fe; Li*O*Ta; Li sy 3; LiTaO; Li
cp; Li; O; Ta

L12 ANSWER 5 OF 33 INSPEC (C) 2006 IET on STN
AN 2003:7522748 INSPEC DN A2003-05-4270G-007; B2003-03-4110-011 <<LOGINID::20061206>>
TI Photorefractive properties of iron-doped ***lithium***
tantalate crystals
AU Imbrock, J.; Baumer, C.; Hesse, H.; Kip, D.; Kratzig, E. (Phys. Dept.,
Osnabruck Univ., Germany)
SO Technical Digest. Summaries of papers presented at the Conference on
Lasers and Electro-Optics. Conference Edition (IEEE Cat. No.02CH37337),
vol.1, 2002, p. 212 vol.1 of (670+96 suppl.) pp., 3 refs.
ISBN: 1 55752 705 9
Published by: Opt. Soc. America, Washington, DC, USA
Conference: Technical Digest. Summaries of papers presented at the
Conference on Lasers and Electro-Optics. Conference Edition, Long Beach,
CA, USA, 19-24 May 2002
Sponsor(s): IEEE/Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America;
Quantum Electron. Div. Eur. Phys. Soc.; Opt. Soc. Japanese Quantum
Electron. Joint Group
DT Conference; Conference Article
TC Experimental
CY United States

LA English
AB. Summary form only given. We have grown congruent iron-doped
LiTaO3 crystals with six different iron concentrations.
Photorefractive properties are studied by means of a two-beam
interference setup. ***Holograms*** are recorded and erased with
ordinarily polarized light of different ***wavelengths*** of an
Ar-ion laser
CC A4270G Light-sensitive materials; A4225J Optical polarization; A7240
Photoconduction and photovoltaic effects; photodielectric effects; A4240K
Holographic interferometry; other holographic techniques; A0760L Optical
interferometry; B4110 Optical materials; B4210 Photoconducting materials
and properties; B4350 Holography
CT ***holographic*** interferometry; iron; light polarisation; lithium
compounds; photorefractive materials; photovoltaic effects
ST crystal growth from melt; congruent iron-doped LiTaO3 crystals;
concentrations; thermal treatments; photorefractive properties; two-beam
interference setup; ordinarily polarized light; Ar-ion laser; hologram
recording; LiTaO3:Fe
CHI LiTaO3:Fe ss, LiTaO3 ss, TaO3 ss, Fe ss, Li ss, O3 ss, Ta ss, O ss, Fe
el, Fe dop
ET Li*O*Ta; Li sy 3; sy 3; O sy 3; Ta sy 3; LiTaO3; Li cp; cp; Ta cp; O cp;
Fe*O*Ta; Fe sy 3; TaO3:Fe; Fe doping; doped materials; O*Ta; TaO; Fe;
LiTaO; Li; O; Ta; Ar

L12 ANSWER 6 OF 33 INSPEC (C) 2006 IET on STN
AN 2001:7090466 INSPEC DN A2001-24-4265P-004; B2001-12-4340P-004 <<LOGINID::20061206>>
TI ***Wavelength*** -selective photonic switching in paraelectric
potassium ***lithium*** ***tantalate*** niobate
AU Agranat, A.J.; Secundo, L.; Golshani, N.; (Dept. of Appl. Phys., Hebrew
Univ., Jerusalem, Israel), Razvag, M.
SO Optical Materials (Oct. 2001), vol.18, no.1, p. 195-7, 3 refs.
CODEN: OMATET, ISSN: 0925-3467
SICI: 0925-3467(200110)18:1L.195:WSPS;1-5
Price: 0925-3467/2001/$20.00
Doc.No.: S0925-3467(01)00166-5
Published by: Elsevier, Netherlands
Conference: Optoelectronics IV: Photorefractive Materials: Physical
Phenomena and Applications. Symposium J of the 2000 E-MRS-IUMRS-ICEM
Spring Conference, Strasbourg, France, 30 May-2 June 2000
DT Conference; Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB A generic ***wavelength*** -selective switching method is presented.
The method is based on the voltage-controlled photorefractive effect in
paraelectric crystals. The switch consists of a crystal at the
paraelectric phase in which a space charge grating was stored by a
photorefractive process. Diffraction occurs by the application of a
uniform electric field that causes the space charge grating to induce an
index grating. Results of the diffraction efficiency as a function of the
applied field and the time dependence of the diffracted beam are
presented. The performance envelop of a switch based on this effect is
briefly discussed
CC A4265P Optical bistability, multistability and switching; A4270G
Light-sensitive materials; A4240H Holographic recording; A4280F Gratings,
echelles; A7750 Dielectric breakdown and space-charge effects; A4280S
Optical communication devices; A7820J Electro-optical effects (condensed
matter); A4240E Holographic optical elements; holographic gratings;
A7820W Other optical properties of condensed matter; B4340P Optical
bistability, multistability and switching; B6260M Multiplexing and
switching in optical communication; B4110 Optical materials; B4350
Holography; B6260 Optical communication; B4150 Electro-optical devices
CT dielectric materials; electro-optical effects; electro-optical switches;
holographic gratings; ***holography*** ; lithium compounds;
optical fibre communication; packet switching; photonic switching
systems; photorefractive materials; potassium compounds; space charge;
wavelength division multiplexing
ST wavelength-selective photonic switching; paraelectric; generic
wavelength-selective switching method; voltage-controlled photorefractive
effect; paraelectric crystals; crystal; paraelectric phase; space charge
grating; photorefractive process; diffraction; uniform electric field;
index grating; diffraction efficiency; applied field; time dependence;

diffracted beam; performance envelop; K1-yLiyTa1-xNbxO3; KLiTaO3NbO3
CHI KLiTaO3NbO3 ss, NbO3 ss, TaO3 ss, Li ss, Nb ss, O3 ss, Ta ss, K ss, O ss
ET Li*Nb*O*Ta; Li sy 4; sy 4; Nb sy 4; O sy 4; Ta sy 4; LiyTa1-xNbxO3; Li cp; cp; Ta cp; Nb cp; O cp; Nb*O*Ta; Nb sy 3; sy 3; O sy 3; Ta sy 3; TaO3NbO3; TaO3NbO; Nb*O; NbO; O*Ta; TaO; Li; Nb; O; Ta

L12 ANSWER 7 OF 33 INSPEC (C) 2006 IET on STN
AN 2001:6902804 INSPEC DN A2001-10-7850-004 <<LOGINID::20061206>>
TI Relaxation of light-induced absorption changes in photorefractive ***lithium*** ***tantalate*** crystals
AU Wevering, S.; Imbrock, J.; Kratzig, E. (Osnabruck Univ., Germany)
SO Journal of the Optical Society of America B (Optical Physics) (April 2001), vol.18, no.4, p. 472-8, 21 refs.
CODEN: JOBPDE, ISSN: 0740-3224
SICI: 0740-3224(200104)18:4L.472:RLIA;1-G
Price: 0740-3224/2001/040472-7$15.00
Doc.No.: S0740-3224(01)00304-6
Published by: Opt. Soc. America, USA
DT Journal
TC Theoretical; Experimental
CY United States
LA English
AB Light-induced absorption changes in iron-doped ***lithium*** ***tantalate*** crystals are generated with ultraviolet nanosecond pulses of a frequency-tripled Nd:YAG laser. The relaxation follows a stretched-exponential function in which the stretching factor is approximately 0.2-0.3. The dependences of the relaxation of the absorption changes on light intensity, temperature, and concentration of the Fe dopant are investigated. A simple model to account for distance-dependent transitions between populated shallow levels and deep traps is proposed to explain the experimental data. The consequences of the results presented are discussed with respect to the application of two- ***color*** ***holography*** for nonvolatile data storage.
CC A7850E Impurity and defect absorption in insulators; A4270G Light-sensitive materials; A4240H Holographic recording; A7840H Visible and ultraviolet spectra of other nonmetals
CT deep levels; ***holographic*** storage; impurity absorption spectra; iron; lithium compounds; photorefractive materials; ultraviolet spectra
ST light-induced absorption change relaxation; photorefractive lithium tantalate crystals; ultraviolet nanosecond pulses; frequency-tripled Nd:YAG laser; stretched-exponential function; stretching factor; light intensity; temperature dependence; concentration dependence; Fe dopant; distance-dependent transitions; populated shallow levels; deep traps; two-color holography; nonvolatile data storage; LiTaO3:Fe; YAG:Nd; YAl5O12:Nd
CHI LiTaO3:Fe ss, LiTaO3 ss, TaO3 ss, Fe ss, Li ss, O3 ss, Ta ss, O ss, Fe el, Fe dop; YAl5O12:Nd ss, YAl5O12 ss, Al5O12 ss, Al5 ss, O12 ss, Al ss, Nd ss, O ss, Y ss, Nd el, Nd dop
ET Nd; Fe*O*Ta; Fe sy 3; sy 3; O sy 3; Ta sy 3; TaO3:Fe; Fe doping; doped materials; Ta cp; cp; O cp; O; O*Ta; TaO; Fe; Li*O*Ta; Li sy 3; LiTaO; Li cp; Li; Ta; Al*O*Y; Al sy 3; Y sy 3; YAl5O; Y cp; Al cp; Al*O; Al5O; Al; Y

L12 ANSWER 8 OF 33 INSPEC (C) 2006 IET on STN
AN 2000:6716019 INSPEC DN A2000-21-7820W-003 <<LOGINID::20061206>>
TI Enhancement of the photorefractive effect by Er doping in ***LiTaO3***
AU Kostritskii, S.M.; (Dept. of Phys., Kemerovo State Univ., Russia), Maring, D.B.; Tavlykaev, R.F.; Ramaswamy, R.V.
SO Advances in Photorefractive Materials, Effects, and Devices. Seventh Topical Meeting. OSA Trends in Optics and Photonics Series Vol.27, 1999, p. 72-9 of xii+673 pp., 18 refs.
Editor(s): Andersen, P.E.; Johansen, P.M.; Pedersen, H.C.; Petersen, P.M.; Saffman, M.
ISBN: 1 55752 606 0
Published by: Opt. Soc. America, Washington, DC, USA
Conference: Advances in Photorefractive Materials, Effects, and Devices. Seventh Topical Meeting, Elsimore, Denmark, 27-30 June 1999
Sponsor(s): Danish Natural Sci. Res. Council; Danish Opt. Soc.; Danish Phys. Soc.; Eur. Opt. Soc. et al
DT Conference; Conference Article
TC Experimental
CY United States

LA English
AB It is established that Er doping increases significantly the photorefractive effect in ***LiTaO3*** . The mechanisms of increased photorefractivity attributed to Er doping are identified based on studies of Raman and fluorescence spectra. Potential applications toward high-efficiency nonvolatile ***holographic*** storage devices with two- ***color*** recording are discussed
CC A7820W Other optical properties of condensed matter; A7855H Photoluminescence in other inorganic materials; A7830G Infrared and Raman spectra in inorganic crystals; A4280T Optical storage and retrieval; A4240H Holographic recording; A4270G Light-sensitive materials
CT erbium; fluorescence; ***holographic*** storage; lithium compounds; photorefractive effect; photorefractive materials; Raman spectra
ST enhanced photorefractive effect; Er doping; LiTaO3; Raman spectra; fluorescence spectra; high-efficiency nonvolatile holographic storage devices; two-color recording; LiTaO3:Er
CHI LiTaO3:Er ss, LiTaO3 ss, TaO3 ss, Er ss, Li ss, O3 ss, Ta ss, O ss, Er el, Er dop
ET O*Ta; TaO3; Ta cp; cp; O cp; Er*O*Ta; Er sy 3; sy 3; O sy 3; Ta sy 3; TaO3:Er; Er doping; doped materials; TaO; Er; Li*O*Ta; Li sy 3; LiTaO; Li cp; Li; O; Ta; LiTaO3

L12 ANSWER 9 OF 33 INSPEC (C) 2006 IET on STN
AN 1999:6348841 INSPEC DN A1999-20-4240-009; B1999-10-4350-025 <<LOGINID::20061206>>
TI Nonvolatile ***holographic*** storage in photorefractive ***lithium*** ***tantalate*** crystals with laser pulses
AU Imbrock, J.; Wevering, S.; Buse, K.; Kratzig, E. (Fachbereich Phys., Osnabruck Univ., Germany)
SO Journal of the Optical Society of America B (Optical Physics) (Sept. 1999), vol.16, no.9, p. 1392-7, 17 refs.
CODEN: JOBPDE, ISSN: 0740-3224
SICI: 0740-3224(199909)16:9L.1392:NHSP;1-1
Price: 0740-3224/99/091392-6$15.00
Doc.No.: S0740-3224(99)03509-2
Published by: Opt. Soc. America, USA
DT Journal
TC Experimental
CY United States
LA English
AB Nonvolatile ***holograms*** are recorded in photorefractive ***LiTaO3*** :Fe with laser pulses by use of two-step excitation. Ultraviolet laser pulses (***wavelength*** .lambda.=355 nm) yield a strong increase of absorption (as much as 600 m-1 at .lambda.=633 nm) and sensitize the crystals for subsequent infrared (.lambda.=1064 nm) ***holographic*** recording. Refractive-index changes of as much as 1.6.times.10-4 are achieved for intensities of the infrared light of 1011 W/m2. The saturation values are proportional to the concentration of Fe3+ ions. Nondestructive readout with infrared light is possible, and the ***holograms*** remain erasable for ultraviolet light. Typical time constants of recording and erasure are 0.5 .mu.s for intensities of the ultraviolet light of 1011 W/m2. The results can be explained with a two-level charge-transport model
CC A4240H Holographic recording; A4270G Light-sensitive materials; A4265G Optical transient phenomena, self-induced transparency, optical saturation and related effects; B4350 Holography; B4110 Optical materials; B4340G Optical saturation and related effects
CT ***holography*** ; iron; lithium compounds; nondestructive readout; optical saturation; photorefractive materials; recording
ST nonvolatile holographic recording; photorefractive crystals; laser pulses; two-step excitation; ultraviolet laser pulses; absorption; infrared holographic recording; refractive-index changes; infrared light; saturation values; nondestructive readout; erasable holograms; ultraviolet light; time constants; recording; erasure; two-level charge-transport model; LiTaO3:Fe; 355 nm; 633 nm; 1064 nm; 0.5 mus
CHI LiTaO3:Fe ss, LiTaO3 ss, TaO3 ss, Fe ss, Li ss, O3 ss, Ta ss, O ss, Fe el, Fe dop
PHP wavelength 3.55E-07 m; wavelength 6.33E-07 m; wavelength 1.064E-06 m; time 5.0E-07 s
ET Fe*O*Ta; Fe sy 3; sy 3; O sy 3; Ta sy 3; TaO3:Fe; Fe doping; doped materials; Ta cp; cp; O cp; O*Ta; TaO; Fe; Li*O*Ta; Li sy 3; LiTaO; Li cp; Li; O; Ta; Fe*Li*O*Ta; Fe sy 4; sy 4; Li sy 4; O sy 4; Ta sy 4; LiTaO3:Fe; Fe3+; Fe ip 3; ip 3

L12 ANSWER 10 OF 33 INSPEC (C) 2006 IET on STN
AN 1999:6247427 INSPEC DN A1999-12-4270G-001; B1999-06-4110-013 <<LOGINID::20061206>>
TI Stoichiometric ***LiTaO3*** for dynamic ***holography*** in near UV ***wavelength*** range
AU Furukawa, Y.; Kitamura, K.; (Nat. Inst. for Res. in Inorg. Mater., Tsukuba, Japan), Niwa, K.; Hatano, H.; Bernasconi, P.; Montemezzani, G.; Gunter, P.
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (March 1999), vol.38, no.3B, p. 1816-19, 18 refs.
CODEN: JAPNDE, ISSN: 0021-4922
SICI: 0021-4922(199903)38:3BL.1816:SLDH;1-1
Published by: Publication Office, Japanese Journal Appl. Phys, Japan
Conference: Optical Memories, Tsukuba, Japan, 20-22 Oct. 1998
DT Conference; Conference Article; Journal
TC Practical; Experimental
CY Japan
LA English
AB ***LiTaO3*** single crystals with near-stoichiometric composition are grown using a double crucible Czochralski method equipped with an automatic powder supply system. Their photorefractive properties are compared with those of ***LiTaO3*** crystals grown from the congruent composition melt. Two beam coupling experiments show that nearly stoichiometric ***LiTaO3*** crystals exhibit considerably higher photorefractive gain, speed and sensitivity than conventional congruent crystals, due to the relatively large photoconductivity observed at near UV ***wavelengths*** , stoichiometric crystals are further characterized by small photogalvanic fields, making them very attractive for dynamic ***holography*** in this ***wavelength*** range
CC A4270G Light-sensitive materials; A8110F Crystal growth from melt; A7240 Photoconduction and photovoltaic effects; photodielectric effects; A4280T Optical storage and retrieval; A4240M Applications of holography; A4265M Multiwave mixing; B4110 Optical materials; B0510 Crystal growth; B4210 Photoconducting materials and properties; B4120 Optical storage and retrieval; B4350 Holography; B4340F Optical phase conjugation and multiwave mixing
CT crystal growth from melt; ***holographic*** storage; lithium compounds; multiwave mixing; optical materials; photoconductivity; photovoltaic effects
ST stoichiometric LiTaO3; dynamic holography; near UV wavelength range; LiTaO3 single crystals; near-stoichiometric composition; double crucible Czochralski method; automatic powder supply; photorefractive properties; congruent composition melt; two beam coupling; nearly stoichiometric LiTaO3 crystals; photorefractive gain; large photoconductivity; near UV wavelengths; small photogalvanic fields; LiTaO3
CHI LiTaO3 ss, TaO3 ss, Li ss, O3 ss, Ta ss, O ss
ET Li*O*Ta; Li sy 3; sy 3; O sy 3; Ta sy 3; LiTaO3; Li cp; cp; Ta cp; O cp; O*Ta; TaO3; TaO; Li; O; Ta

L12 ANSWER 11 OF 33 INSPEC (C) 2006 IET on STN
AN 1997:5645422 INSPEC DN A1997-17-4270G-001; B1997-09-4110-014 <<LOGINID::20061206>>
TI Light-induced charge transport processes in photorefractive crystals. II. Materials
AU Buse, K. (Fachbereich Phys., Osnabruck Univ., Germany)
SO Applied Physics B (Lasers and Optics) (April 1997), vol.B64, no.4, p. 391-407, 254 refs.
CODEN: APBOEM, ISSN: 0946-2171
SICI: 0946-2171(199704)B64:4L.391:LICT;1-S
Published by: Springer-Verlag, Germany
DT Journal
TC Experimental
CY Germany
LA English
AB For pt.I see ibid., p.273, 1997. The charge transport processes in different photorefractive oxide crystals are reviewed and consequences for applications are outlined. - The light-induced charge transport processes in LiNbO3, ***LiTaO3*** , BaTiO3, Ba1-xSrxTiO3 (0.ltoreq.x.ltoreq.1, BST), Ba1-xCaxTiO3 (0.ltoreq.x.ltoreq.1, BCT), KNbO3, KTa1-xNbxO3 (0.ltoreq.x.ltoreq. 1, KTN), Sr1-xBaxNb2O6 (0.ltoreq.x.ltoreq.1, SBN) and Bi12(Si,Ti,Ge)O20 (BSO, BTO, BGO) are discussed. Utilizing the knowledge on the charge transport processes, consequences for applications are deduced; improved techniques for

nondestructive readout of ***holograms*** with light of the recording ***wavelength*** are described

CC A4270G Light-sensitive materials; A7820W Other optical properties of condensed matter; A7240 Photoconduction and photovoltaic effects; photodielectric effects; A4265G Optical transient phenomena, self-induced transparency, optical saturation and related effects; A4240 Holography; B4110 Optical materials; B4350 Holography; B4210 Photoconducting materials and properties

CT barium compounds; bismuth compounds; calcium compounds; ***holography*** ; lithium compounds; photoconductivity; photorefractive effect; photorefractive materials; potassium compounds; refractive index; self-induced transparency; strontium compounds

ST light induced charge transport processes; light induced transparency; photorefractive oxide crystals; holography; hologram nondestructive readout; photoconductivity; titanates; niobates; tantalates; LiNbO3; LiTaO3; BaTiO3; BaSrTiO3; BaCaTiO3; KNbO3; KTaNbO3; SrBaNb2O6; Bi12SiO20; Bi12GeO20; Bi12TiO20

CHI LiNbO3 ss, NbO3 ss, Li ss, Nb ss, O3 ss, O ss; LiTaO3 ss, TaO3 ss, Li ss, O3 ss, Ta ss, O ss; BaTiO3 ss, TiO3 ss, Ba ss, O3 ss, Ti ss, O ss; BaSrTiO3 ss, TiO3 ss, Ba ss, O3 ss, Sr ss, Ti ss, O ss; BaCaTiO3 ss, TiO3 ss, Ba ss, Ca ss, O3 ss, Ti ss, O ss; KNbO3 ss, NbO3 ss, Nb ss, O3 ss, K ss, O ss; KTaNbO3 ss, NbO3 ss, Nb ss, O3 ss, Ta ss, K ss, O ss; SrBaNb2O6 ss, Nb2 ss, Ba ss, Nb ss, O6 ss, Sr ss, O ss; Bi12SiO20 ss, Bi12 ss, SiO2 ss, O20 ss, Bi ss, Si ss, O ss; Bi12GeO20 ss, Bi12 ss, GeO2 ss, O20 ss, Bi ss, Ge ss, O ss; Bi12TiO20 ss, Bi12 ss, O20 ss, Bi ss, Ti ss, O ss

ET Nb*O; NbO3; Nb cp; cp; O cp; O*Ta; TaO3; Ta cp; O*Ti; TiO3; Ti cp; O*Sr*Ti; O sy 3; sy 3; Sr sy 3; Ti sy 3; SrTiO3; Sr cp; Ca*O*Ti; Ca sy 3; CaTiO3; Ca cp; Ba*Nb*O; Ba sy 3; Nb sy 3; BaNb2O6; Ba cp; O*Si; SiO20; Si cp; Ge*O; GeO20; Ge cp; TiO20; NbO; Li; Nb; O; TaO; Ta; TiO; Ba; Ti; SrTiO; Sr; CaTiO; Ca; BaNb2O; SiO; Bi; Si; GeO; Ge; Li*Nb*O; Li sy 3; LiNbO3; Li cp; Li*O*Ta; Ta sy 3; LiTaO3; Ba*O*Ti; BaTiO3; Ba*O*Sr*Ti; Ba sy 4; sy 4; O sy 4; Sr sy 4; Ti sy 4; Ba1-xSrxTiO3; Ba*Ca*O*Ti; Ca sy 4; Ba1-xCaxTiO3; K*Nb*O; K sy 3; KNbO3; K cp; K*Nb*O*Ta; K sy 4; Nb sy 4; Ta sy 4; KTa1-xNbxO3; Ba*Nb*O*Sr; Sr1-xBaxNb2O6; Bi*Si; Bi sy 2; sy 2; Si sy 2; Bi12(Si; Bi cp

L12 ANSWER 12 OF 33 INSPEC (C) 2006 IET on STN

AN 1983:2022036 INSPEC DN A1983-036959 <<LOGINID::20061206>>

TI Photorefraction and anisotropic light scattering in LiNbO3-Fe crystals

AU Augustov, P.A.; Reinfelde, M.J.; Shvarts, K.K. (Inst. of Phys., Acad. of Sci., Riga-Salaspils, Latvian SSR, USSR)

SO Applied Physics A (Solids and Surfaces) (Nov. 1982), vol.A29, no.3, p. 169-72, 10 refs.
CODEN: APSFDB, ISSN: 0721-7250
Price: 0721-7250/82/0029/0169/$01.00

DT Journal

TC Experimental

CY Germany, Federal Republic of

LA English

AB By ***holographic*** recording in LiNbO3-Fe and ***LiTaO3*** -Fe crystals a new light scattering effect has been observed with an optical indicatrix along the optical axis. The kinetics of the light scattering depends on the intensity, ***wavelength*** as well as the polarization of the incident light. The ***holographic*** volume grating is created by the interference of incident light and light scattered by crystal inhomogeneities

CC A4240H Holographic recording; A4280F Gratings, echelles; A7820 Optical properties of condensed matter

CT ***holographic*** gratings; ***holography*** ; iron; light scattering; lithium compounds; photorefractive effect

ST Fe doped; photorefraction; anisotropic light scattering; LiNbO3; crystals; holographic recording; LiTaO3; optical indicatrix; volume grating

ET Nb*O; NbO3; Nb cp; cp; O cp; O*Ta; TaO3; Ta cp; Fe*Li*Nb*O; Fe sy 4; sy 4; Li sy 4; Nb sy 4; O sy 4; LiNbO3; Li cp; LiNbO3-Fe; Fe*Li*O*Ta; Ta sy 4; LiTaO3; LiTaO3-Fe

L12 ANSWER 13 OF 33 INSPEC (C) 2006 IET on STN

AN 1975:782251 INSPEC DN A1975-044428; B1975-025231 <<LOGINID::20061206>>

TI ***Holographic*** formation of gratings in optical waveguiding layers

AU Wood, V.E.; Hartman, N.F.; Verber, C.M.; Kenan, R.P. (Battelle Columbus Labs., OH, USA)

SO Journal of Applied Physics (March 1975), vol.46, no.3, p. 1214-15, 11 refs.
CODEN: JAPIAU, ISSN: 0021-8979
DT Journal
TC Experimental
CY United States
LA English
AB Photoreflective formation of thick phase (Bragg) gratings is reported, in which refractive index changes are produced by intersecting guided coherent beams of 0.488 .mu.m ***wavelengths*** in waveguides formed on the surface of LiNbO3 crystals by effusion of Li, and in a waveguide formed on the surface of a ***LiTaO3*** crystal by in-diffusion of a vapour-deposited layer of Nb. The performance of the gratings is assessed
CC A4240K Holographic interferometry; other holographic techniques; A4280F Gratings, echelles; A4280L Optical waveguides and couplers; B4130 Optical waveguides; B4350 Holography
CT diffraction gratings; ***holography*** ; lithium compounds; optical waveguides
ST holographic formation of gratings; photoreflective formation; thick phase gratings; 0.488 microns; Bragg gratings; optical waveguiding layers; LiNbO3 crystals; LiTaO3 crystal
ET Nb*O; NbO3; Nb cp; cp; O cp; O*Ta; TaO3; Ta cp; Li*Nb*O; Li sy 3; sy 3; Nb sy 3; O sy 3; LiNbO3; Li cp; Li; Li*O*Ta; Ta sy 3; LiTaO3; Nb

L12 ANSWER 14 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:863920 CAPLUS <<LOGINID::20061206>>
DN 143:484730
ED Entered STN: 23 Aug 2005
TI Interband photorefraction in pure and Mg-doped near-stoichiometric ***LiTaO3***
AU Juvalta, F.; Dittrich, Ph.; Jazbinsek, M.; Gunter, P.; Montemezzani, G.; Kitamura, K.; Furukawa, Y.
CS Nonlinear Optics Laboratory, Swiss Federal Institute of Technology, Zurich, CH-8093, Switz.
SO Trends in Optics and Photonics (2005), 99(Photorefractive Effects, Materials, and Devices), 96-100
CODEN: TOPRBS
PB Optical Society of America
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB We investigate interband photorefraction in pure and Mg-doped near-stoichiometric ***LiTaO3*** at the deep UV ***wavelength*** of 257 nm. By controlling the stoichiometry, the response time and dynamic range of the interband photorefractive effect can be very much improved. Measured time consts. are in the order of a few tens of milliseconds for UV light intensities of about 100 mW/cm2. Further, we report that Mg doping of near-stoichiometric ***LiTaO3*** increases the grating response rate by a factor of 50 compared with the one in undoped crystals. For UV light intensities larger than 500 mW/cm2 the response time is faster than one millisecond. In Mg-doped near-stoichiometric ***LiTaO3*** , quasi-fixing of ***holog*** gratings with UV light and nondestructive readout in the visible has been obsd.
ST pure magnesium doped near stoichiometric ***lithium*** ***tantalate*** interband photorefraction
IT Photorefractive effect
UV and visible spectra
(interband photorefraction in pure and magnesium-doped near-stoichiometric lithium tantalum oxide at deep UV ***wavelength*** of 257 nm)
IT 12031-66-2, Lithium tantalum oxide (***LiTaO3***)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(Mg-doped; interband photorefraction in pure and magnesium-doped near-stoichiometric lithium tantalum oxide at deep UV ***wavelength*** of 257 nm)
IT 7439-95-4, Magnesium, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)

(dopant; interband photorefraction in pure and magnesium-doped
near-stoichiometric lithium tantalum oxide at deep UV
wavelength of 257 nm)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L12 ANSWER 15 OF 33 CAPLUS
AN 2005:119291 CAPLUS <<LOGINID::20061206>>
DN 144:180652
ED Entered STN: 11 Feb 2005
TI Investigation on dark decay of two- ***color*** ***holograms*** in
near-stoichiometric LiNbO3 and ***LiTaO3***
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Ravi, Ganesan; Nakamura,
Masaru; Hatano, Hideki
CS Advanced Materials Laboratory, National Institute for Materials Science,
1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering
(2005), 5646(Nonlinear Optical Phenomena and Applications), 623-627
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB We have investigated the dark decay mechanism by measuring dark decay time
consts. of two- ***color*** ***holograms*** recorded in undoped and
slightly doped near-stoichiometric LiNbO3 and ***LiTaO3*** crystals in
the temp. range from 50 to 200.degree.C. All the samples in this work
obey an Arrhenius-type dependence of time const. on abs. temp., and yield
nearly same activation energies of 1.08 eV. The results show that proton
compensation mechanism dominated the dark decay process. Lifetimes of
holograms at room temp. in ***LiTaO3*** are one order of
magnitude longer than that in LiNbO3 if having the same proton concn.
ST dark decay two ***color*** ***holograms*** lithium niobium oxide
tantalum
IT Stretching vibration
(hydroxyl, proton compensation; study of dark decay of two-
color ***holograms*** in near-stoichiometric lithium
niobium oxide and lithium tantalum oxide)
IT Diffusion
(proton; study of dark decay of two- ***color*** ***holograms***
in near-stoichiometric lithium niobium oxide and lithium tantalum
oxide)
IT Activation energy
Boltzmann equation
Curie temperature (ferroelectric)
Czochralski crystal growth
Holographic recording materials
Photorefractive materials
Proton transfer
(study of dark decay of two- ***color*** ***holograms*** in
near-stoichiometric lithium niobium oxide and lithium tantalum oxide)
IT ***Holography***
(two- ***color*** ; study of dark decay of two- ***color***
holograms in near-stoichiometric lithium niobium oxide and
lithium tantalum oxide)
IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; study of dark decay of two- ***color*** ***holograms***
in near-stoichiometric lithium niobium oxide and lithium tantalum
oxide)
IT 3352-57-6, Hydroxyl, properties 12586-59-3, Proton
RL: PRP (Properties)

(proton compensation; study of dark decay of two- ***color*** ***holograms*** in near-stoichiometric lithium niobium oxide and lithium tantalum oxide)
IT 12031-63-9, Lithium niobate ($LiNbO_3$) 12031-66-2, ***Lithium*** ***tantalate*** (***$LiTaO_3$***)
RL: TEM (Technical or engineered material use); USES (Uses)
(study of dark decay of two- ***color*** ***holograms*** in near-stoichiometric lithium niobium oxide and lithium tantalum oxide)
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(2) Coufal, H; Holographic Data Storage 2000
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AN 2004:1034466 CAPLUS <<LOGINID::20061206>>
DN 143:275499
ED Entered STN: 03 Dec 2004
TI Comparison of two- ***color*** ***hologram*** lifetimes of near-stoichiometric ***lithium*** niobate and of ***tantalate*** crystals
AU Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Ravi, Ganesan; Nakamura, Masaru; Furukawa, Yasunori; Hatano, Hideki
CS Advanced Materials Laboratory, National Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SO Applied Optics (2004), 43(31), 5778-5783
CODEN: APOPAI; ISSN: 0003-6935
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Lifetimes of two- ***color*** nonvolatile ***holograms*** recorded in undoped- or in slightly doped near-stoichiometric ***lithium*** niobate and ***tantalate*** crystals were measured and compared by extrapolation of the high-temp. data. A proton-compensation mechanism dominated the dark decay and yielded similar activation energies, of 1.05 and 1.10 eV, for near-stoichiometric ***lithium*** niobate and ***tantalate*** crystals, resp. The lifetime of ***holograms*** in ***lithium*** ***tantalate*** was 1 order of magnitude longer than that in lithium niobate with the same proton concn., which was consistent with our theor. estn. The projected lifetime of two- ***color*** ***holograms*** in ***lithium*** ***tantalate*** without observable OH- absorption is longer than 50 years.
ST ***hologram*** lifetime ***lithium*** niobate ***tantalate*** crystal
IT Activation energy
Curie temperature (ferromagnetic)
Dopants
Holographic recording materials
IR spectra
Stoichiometry

UV and visible spectra
(lifetimes of two- ***color*** ***holograms*** recorded in near-stoichiometric ***lithium*** niobate and ***lithium*** ***tantalate*** crystals)

IT 7439-96-5, Manganese, uses 7440-27-9, Terbium, uses 14280-30-9, Hydroxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(lifetimes of two- ***color*** ***holograms*** recorded in near-stoichiometric ***lithium*** niobate and ***lithium*** ***tantalate*** crystals)

IT 12031-63-9, Lithium niobate LiNbO3 12031-66-2, ***Lithium*** ***tantalate*** (***LiTaO3***)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(lifetimes of two- ***color*** ***holograms*** recorded in near-stoichiometric ***lithium*** niobate and ***lithium*** ***tantalate*** crystals)

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L12 ANSWER 17 OF 33 CAPLUS
AN 2004:898812 CAPLUS <<LOGINID::20061206>>
DN 141:373802
ED Entered STN: 28 Oct 2004
TI Ferroelectric materials and their 2- ***color*** ***holographic*** memory media and wave filter
IN Hatano, Hideki; Liu, Youwen; Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masru; Furukawa, Yasunori
PA Pioneer Electronic Corp., Japan; Toshiba Denko Co., Ltd.; Oxide Corporation
SO Jpn. Kokai Tokkyo Koho, 21 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C30B029-30
ICS C01G035-00; G02B001-02; G02B005-28; G03H001-02
CC 76-8 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

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PI    JP 2004300015          A2     20041028     JP 2004-40215          20040217
      US 2004234867          A1     20041125     US 2004-798974         20040312
PRAI  JP 2003-69897          A      20030314
      JP 2004-40215          A      20040217
CLASS
 PATENT NO.        CLASS  PATENT FAMILY CLASSIFICATION CODES
 --------------    -----  ----------------------------------------------
 JP 2004300015     ICM    C30B029-30
                   ICS    C01G035-00; G02B001-02; G02B005-28; G03H001-02
                   IPCI   C30B0029-30 [ICM,7]; C30B0029-10 [ICM,7,C*];
                          C01G0035-00 [ICS,7]; G02B0001-02 [ICS,7]; G02B0001-00
                          [ICS,7,C*]; G02B0005-28 [ICS,7]; G03H0001-02 [ICS,7]
                   IPCR   G03H0001-02 [I,A]; G03H0001-02 [I,C*]; G03H0001-26
                          [I,A]; G03H0001-26 [I,C*]
                   FTERM  2H048/GA03; 2H048/GA13; 2H048/GA33; 2H048/GA60;
                          2H048/GA62; 2K008/AA04; 2K008/BB05; 2K008/DD23;
                          2K008/EE01; 2K008/FF17; 2K008/HH01; 2K008/HH06;
                          2K008/HH13; 2K008/HH18; 2K008/HH26; 2K008/HH28;
                          4G048/AA04; 4G048/AB01; 4G048/AB02; 4G048/AB05;
                          4G048/AC02; 4G048/AD07; 4G048/AE05; 4G077/AA02;
                          4G077/AB04; 4G077/CF10; 4G077/EC07; 4G077/HA11
 US 2004234867     IPCI   G03H0001-02 [ICM,7]
                   IPCR   G02B0005-28 [I,C*]; G02B0005-28 [I,A]; C01G0035-00
                          [I,C*]; C01G0035-00 [I,A]; C30B0029-10 [I,C*];
                          C30B0029-30 [I,A]; G02B0001-00 [I,C*]; G02B0001-02
                          [I,A]; G03H0001-02 [I,C*]; G03H0001-02 [I,A];
                          G03H0001-26 [I,C*]; G03H0001-26 [I,A]
                   NCL    430/001.000; 359/007.000; 430/002.000
                   ECLA   G03H001/02; G03H001/26; G11B007/0045; G11B007/0065;
                          G11B007/125L2; G11B007/243
AB    The ferroelec. materials whose refractive indexes change by irradn. of 2
      lights of different   ***wavelength***   without redn. treatment nor addn.
      of impurities comprise single-cryst. Li tantalate (LT) having the compn.
      of Li2O/(Li2O + Ta2O5) = 0.4966-0.4995, i.e., near-stoichiometric (NS)
      compn.  Preferably, the proton concn. in the NSLT single crystal is
      defined that IR absorption coeff. in the [OH] stretch mode becomes 0-0.15
      cm-1.  The 2-  ***color***     ***holog***   . memory media contain the
      NSLT single crystal.  The wave filter contains the NSLT single crystal
      having .gtoreq.1 refractive index gratings.
ST    near stoichiometric   ***lithium***      ***tantalate***    ferroelec
      material; two   ***color***     ***holog***  . memory ferroelec
        ***lithium***     ***tantalate***   ; wave filter ferroelec   ***lithium***
        ***tantalate***   ; dopant free near stoichiometric    ***lithium***
        ***tantalate***
IT    Ferroelectric materials
          ***Holographic***   recording materials
      Optical filters
         (single-cryst. near-stoichiometric Li tantalate ferroelec. materials
         for 2-  ***color***     ***holog***   . memory media and wave filter)
IT    12031-66-2DP,   ***Lithium***      ***tantalate***   , near-stoichiometric
      RL: IMF (Industrial manufacture); TEM (Technical or engineered material
      use); PREP (Preparation); USES (Uses)
         (single-cryst. near-stoichiometric Li tantalate ferroelec. materials
         for 2-  ***color***     ***holog***   . memory media and wave filter)

L12   ANSWER 18 OF 33  CAPLUS  COPYRIGHT 2006 ACS on STN
AN    2004:350009  CAPLUS &lt;&lt;LOGINID::20061206&gt;&gt;
DN    141:268440
ED    Entered STN:  30 Apr 2004
TI    Utilizing the pyroelectric effect for infrared   ***holographic***
      recording
AU    Eggert, H. A.; Imbrock, J.; Kraetzig, E.
CS    Fachbereich Physik, Universitaet Osnabrueck, Osnabrueck, 49069, Germany
SO    Ukrains'kii Fizichnii Zhurnal (2004), 49(4), 313-321
      CODEN: UFZHFY; ISSN: 0372-400X
PB    Natsional'na Akademiya Nauk Ukraini, Viddilennya Fiziki i Astronomii
DT    Journal
LA    English
CC    74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other
      Reprographic Processes)
AB      ***Holog***   . gratings are stored in photorefractive   ***lithium***
        ***tantalate***   crystals with IR-laser pulses without previous
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sensitization. Through the absorption of IR light, a thermal grating builds up, which yields a pyroelec. field. Subsequent homogeneous illumination with light of a shorter ***wavelength*** excites electrons that drift in the pyroelec. field. Thus, the ***holog*** . information of the IR light pattern is stored as a vol. phase ***hologram*** that can be read nondestructively. The refractive index change depends mainly on the absorption coeff. at the ***wavelength*** of the recording light and therefore, by choice of suitable dopants, may be extended to telecommunication ***wavelengths*** .

ST pyroelec effect IR ***holog*** recording

IT ***Holography***
Photoconductivity
Pyroelectricity
Refractive index
(utilizing pyroelec. effect for IR ***holog*** . recording)

IT 7439-89-6, Iron, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; utilizing pyroelec. effect for IR ***holog*** . recording)

IT 12031-66-2, ***Lithium*** ***tantalate***
RL: TEM (Technical or engineered material use); USES (Uses)
(utilizing pyroelec. effect for IR ***holog*** . recording)

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD

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AN 2004:257817 CAPLUS <<LOGINID::20061206>>
DN 141:250441
ED Entered STN: 29 Mar 2004
TI Sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***
AU Dittrich, Philipp; Montemezzani, Germano; Habu, Masayuki; Matsukura, Makoto; Takekawa, Shunji; Kitamura, Kenji; Gunter, Peter
CS Swiss Federal Institute of Technology, Institute of Quantum Electronics, Nonlinear Optics Laboratory, ETH Honggerberg, Zurich, CH-8093, Switz.
SO Optics Communications (2004), 234(1-6), 131-136
CODEN: OPCOB8; ISSN: 0030-4018
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Doping of near stoichiometric Li tantalate with Mg leads to enhanced interband photorefractive effects compared with undoped crystals. Studies are performed at the deep UV ***wavelength*** .lambda.UV = 257 nm by Bragg diffraction expts. The formation of 2 grating components with a destructive mutual phase shift is obsd. For UV light intensities larger

than .apprx.500 mW/cm2 the typical time const. for the response of the interband grating is faster than 1 ms. The authors also obsd. quasi-fixing of ***holog*** . gratings with UV light and nondestructive, optically switchable readout at the ***wavelength*** .lambda.HeNe = 632.8 nm.

ST magnesium doped ***lithium*** ***tantalate*** submillisecond interband photorefraction; UV visible spectra magnesium doped ***lithium*** ***tantalate*** ; diffraction grating ***holog*** magnesium doped ***lithium*** ***tantalate***

IT Photorefractive effect
(interband; sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***)

IT ***Holographic*** diffraction gratings
Optical diffraction
UV and visible spectra
(of magnesium doped ***lithium*** ***tantalate***)

IT 1309-48-4, Magnesium oxide (MgO), properties 7439-95-4, Magnesium, properties 22537-22-0, Magnesium 2+, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(***LiTaO3*** contg.; sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***)

IT 12031-66-2, ***Lithium*** ***tantalate*** (***LiTaO3***)
RL: PRP (Properties)
(Mg-doped; sub-millisecond interband photorefraction in magnesium doped ***lithium*** ***tantalate***)

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L12 ANSWER 20 OF 33 CAPLUS
AN 2004:185038 CAPLUS <<LOGINID::20061206>>
DN 141:78611
ED Entered STN: 08 Mar 2004
TI Deep-ultraviolet interband photorefraction in ***lithium*** ***tantalate***
AU Dittrich, Philipp; Koziarska-Glinka, Bozena; Montemezzani, Germano; Gunter, Peter; Takekawa, Shunji; Kitamura, Kenji; Furukawa, Yasunori
CS Swiss Federal Institute of Technology, Institute of Quantum Electronics, Nonlinear Optics Laboratory, ETH Honggerberg, Zurich, CH-8093, Switz.
SO Journal of the Optical Society of America B: Optical Physics (2004), 21(3), 632-639
CODEN: JOBPDE; ISSN: 0740-3224
PB Optical Society of America
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Interband photorefraction in near-stoichiometric ***lithium*** ***tantalate*** is demonstrated and investigated at the deep-UV ***wavelength*** .lambda.UV=257 nm. Formation of two distinct grating components is directly obsd. in depth-resolved measurements. The diffraction efficiency of a Bragg grating is measured as a function of the UV light intensity, the grating spacing, and the depth of the readout beam beneath the crystal surface. Typical time consts. for the interband effects are of the order of a few tens of milliseconds for UV light

intensities of approx. 100 mW/cm2, 3 orders of magnitude faster than the time consts. reported previously for ***lithium*** ***tantalate***

ST UV interband photorefraction ***lithium*** ***tantalate***
IT ***Holography***
Optical diffraction
Photorefractive effect
(deep-UV interband photorefraction in ***lithium*** ***tantalate***)
IT 12031-66-2D, ***Lithium*** ***tantalate*** ***LiTaO3*** , near-stoichiometric
RL: PRP (Properties)
(deep-UV interband photorefraction in ***lithium*** ***tantalate***)
RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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AN 2003:879031 CAPLUS <<LOGINID::20061206>>
DN 140:243491
ED Entered STN: 10 Nov 2003
TI Infrared ***holographic*** recording in ***lithium*** ***tantalate*** crystals by means of the pyroelectric effect
AU Eggert, Helge A.; Imbrock, Joerg; Baeumer, Christoph; Hesse, Hartmut; Kraetzig, Eckhard
CS Fachbereich Physik, Universitaet Osnabrueck, Osnabrueck, 49069, Germany
SO Optics Letters (2003), 28(20), 1975-1977
CODEN: OPLEDP; ISSN: 0146-9592
PB Optical Society of America
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB IR ***holog*** . recording in a two-step process is demonstrated in stoichiometric iron-doped ***lithium*** ***tantalate*** crystals. Through absorption of two intersecting IR pulses (.lambda. = 1064 nm) a temp. grating and thus a modulated pyroelec. field build up. Free electrons, excited by homogeneous light of a shorter ***wavelength*** (.lambda. = 532 nm) drift in this field, and a phase ***hologram*** is stored that can be read nondestructively. The change in refractive index depends mainly on the absorption coeff. at the ***wavelength*** of the recording light and on the intensity of the IR light. The proposed method may be extended to telecommunication ***wavelengths*** by choice of suitable dopants.

ST IR ***holog*** recording ***lithium*** ***tantalate*** crystal pyroelec effect
IT Absorptivity
Pyroelectricity
Refractive index
(IR ***holog*** . recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
IT ***Holography***
(IR; IR ***holog*** . recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
IT 12031-66-2, ***Lithium*** ***tantalate*** (***$LiTaO_3$***)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(iron-doped; IR ***holog*** . recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
IT 15438-31-0, Iron(2+), processes
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(***lithium*** ***tantalate*** doped with; IR ***holog*** . recording in iron-doped ***lithium*** ***tantalate*** crystals by pyroelec. effect)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Baumer, C; Appl Phys Lett 2003, V82, P2248 CAPLUS
(3) Baumer, C; J Appl Phys 2003, V93, P3102 CAPLUS
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(8) Imbrock, J; J Opt Soc Am B 1999, V16, P1392 CAPLUS
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(10) von der Linde, D; Appl Phys Lett 1974, V25, P155 CAPLUS
(11) Vormann, H; Solid State Commun 1984, V49, P843 CAPLUS

AN 2003:260910 CAPLUS <<LOGINID::20061206>>
DN 138:278488
ED Entered STN: 04 Apr 2003
TI Pretreatment method for ***hologram*** recording medium
IN Kitamura, Kenji; Takekawa, Shunji; Nakamura, Masaru; Yamaji, Takashi; Hatano, Hideki
PA Independent Administrative Institution National Institute for Materials Science, Japan
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G03H001-04
INCL 430001000; 430002000; 359007000; 430394000
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003064294	A1	20030403	US 2002-235853	20020906
	JP 2003084652	A2	20030319	JP 2001-272499	20010907
	JP 3728410	B2	20051221		
PRAI	JP 2001-272499	A	20010907		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2003064294	ICM	G03H001-04
	INCL	430001000; 430002000; 359007000; 430394000
	IPCI	G03H0001-04 [ICM,7]
	IPCR	G03H0001-02 [I,C*]; G03H0001-02 [I,A]; G03H0001-04 [I,C*]; G03H0001-04 [I,A]; G03H0001-16 [I,A]; G03H0001-18 [I,C*]; G03H0001-18 [I,A]; G03H0001-26 [I,C*]; G03H0001-26 [I,A]; G11B0007-00 [I,C*]; G11B0007-0065 [I,A]
	NCL	430/001.000; 359/007.000; 430/002.000; 430/394.000
	ECLA	G03H001/18

JP 2003084652 IPCI G03H0001-04 [ICM,7]; G11B0007-0065 [ICS,7]; G11B0007-00 [ICS,7,C*]
IPCR G03H0001-02 [I,C*]; G03H0001-02 [I,A]; G03H0001-04 [I,C*]; G03H0001-04 [I,A]; G03H0001-16 [I,A]; G03H0001-18 [I,C*]; G03H0001-18 [I,A]; G03H0001-26 [I,C*]; G03H0001-26 [I,A]; G11B0007-00 [I,C*]; G11B0007-0065 [I,A]

AB Disclosed is a pretreatment method for a ***hologram*** recording medium used in the ***hologram*** recording method in which information signals loaded on signal beam are recorded by injecting coherent signal beam and ref. beam to the ***hologram*** recording medium which is exposed to first light having first ***wavelength*** of UV band or short- ***wavelength*** visible light band in advance in order to generate light-induced absorption, wherein the coherent signal beam and ref. beam each having longer ***wavelength*** than the first ***wavelength*** . The pretreatment method comprises subjecting the ***hologram*** recording medium to oxidn. treatment prior to the irradn. of the first light has been completed.

ST pretreatment ***hologram*** recording medium

IT ***Holographic*** recording materials
(pretreatment method for ***hologram*** recording medium)

IT Optical reflectors
(pretreatment method for ***hologram*** recording medium contg.)

IT 1313-96-8, Niobium oxide 1314-61-0, Tantalum oxide 12031-63-9, Lithium niobate ($LiNbO_3$) 12031-66-2, ***Lithium*** ***tantalate*** 12057-24-8, Lithium oxide, uses 195144-63-9, Lithium oxide(LiO_2)
RL: TEM (Technical or engineered material use); USES (Uses)
(pretreatment method for ***hologram*** recording medium contg.)

L12 ANSWER 23 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:248843 CAPLUS <<LOGINID::20061206>>
DN 135:67935
ED Entered STN: 09 Apr 2001
TI Relaxation of light-induced absorption changes in photorefractive ***lithium*** ***tantalate*** crystals
AU Wevering, S.; Imbrock, J.; Kratzig, E.
CS Fachbereich Physik, Universitat Osnabruck, Osnabruck, D-49069, Germany
SO Journal of the Optical Society of America B: Optical Physics (2001), 18(4), 472-478
CODEN: JOBPDE; ISSN: 0740-3224
PB Optical Society of America
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 69, 74

AB Light-induced absorption changes in Fe-doped Li tantalate crystals are generated with UV nanosecond pulses of a frequency-tripled Nd:YAG laser. The relaxation follows a stretched-exponential function in which the stretching factor is .apprx.0.2-0.3. The dependences of the relaxation of the absorption changes on light intensity, temp., and concn. of the Fe dopant are studied. A simple model to account for distance-dependent transitions between populated shallow levels and deep traps is proposed to explain the exptl. data. The consequences of the results presented are discussed with respect to the application of 2- ***color*** ***holog*** . for nonvolatile data storage.

ST relaxation absorption photorefractive iron doped ***lithium*** ***tantalate*** crystal

IT Optical recording
(nonvolatile ***holog*** .; light-induced absorption changes of iron doped ***lithium*** ***tantalate*** crystals in relation to)

IT Activation energy
Simulation and Modeling, physicochemical
(of light-induced absorption changes of iron doped ***lithium*** ***tantalate*** crystals)

IT Optical absorption
(relaxation of light-induced absorption changes in photorefractive ***lithium*** ***tantalate*** crystals)

IT Quantum transition
(relaxation; relaxation of light-induced absorption changes in photorefractive ***lithium*** ***tantalate*** crystals)

IT 12031-66-2, ***Lithium*** ***tantalate***

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(relaxation of light-induced absorption changes in photorefractive ***lithium*** ***tantalate*** crystals)

IT 7439-89-6, Iron, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(relaxation of light-induced absorption changes in photorefractive ***lithium*** ***tantalate*** crystals doped with)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L12 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:777876 CAPLUS <<LOGINID::20061206>>

DN 132:158117

ED Entered STN: 09 Dec 1999

TI Photorefractive waveguides

AU Kip, Detlef; Hukriede, Joerg; Wesner, Monika; Kratzig, Eckhard

CS Phys. Dep., Univ. Osnabrueck, Osnabrueck, Germany

SO Proceedings of SPIE-The International Society for Optical Engineering (1999), 3801(Photorefractive Fiber and Crystal Devices: Materials, Optical Properties, and Applications V), 9-23
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal; General Review

LA English

CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB A review with 64 refs. Photorefractive effects in optical waveguides link 2 interesting research areas: First, light-induced refractive index changes in optical materials, and 2nd waveguide structures that are the basis for integrated optical devices. In the last two decades several devices based on photorefractive waveguides were proposed, and static and dynamic elements were exptl. demonstrated. Permanent refractive index gratings in waveguide devices are of considerable interest for integrated waveguide lasers or ***wavelength*** multiplexers that make use of the high spectral selectivity of ***holog*** . filters. Thermal fixing of ***holog*** . gratings was studied in channel LiNbO3:Ti:Fe waveguides. A ***wavelength*** filter for IR light at .apprx.1.55 .mu.m was fabricated with a peak reflectivity >99%, a bandwidth of 0.1 nm and nearly polarization independent properties. The authors demonstrated the formation of photorefractive spatial solitons in a planar Sr-Ba NbO3 waveguide. In such a geometry, (1 + 1)-dimensional solitons are formed in a true (1 + 1)- dimensional medium, getting rid of the transverse instability that is inherent to soliton propagation in bulk crystals. Coherent collisions between 2 photorefractive solitons result in fusion, repelling, energy exchange, or the creation of a 3rd soliton.

ST review photorefractive waveguide refractive index ***holog*** filter grating

IT Optical filters
(***holog*** .; permanent refractive index gratings as)

IT Photorefractive effect

Refractive index
(light-induced refractive indexes in photorefractive optical waveguides)
IT Optical waveguides
(photorefractive; light-induced refractive indexes in)
IT Solitons
(photorefractive; planar waveguides in relation to)
IT ***Holographic*** diffraction gratings
(thermally fixed; planar waveguides in relation to)
IT 12030-85-2, Potassium niobate (KNbO3) 12031-63-9, Lithium niobate (LiNbO3) 12031-66-2, ***Lithium*** ***tantalate*** (***LiTaO3***) 12047-27-7, Barium titanate (BaTiO3), uses 108706-74-7, Barium niobium strontium oxide ((Ba,Sr)0.25-0.75Nb2O6)
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(photorefractive optical waveguides contg.)
RE.CNT 64 THERE ARE 64 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L12 ANSWER 25 OF 33 CAPLUS
AN 1999:692803 CAPLUS <<LOGINID::20061206>>
DN 132:16800
ED Entered STN: 31 Oct 1999
TI Enhancement of the photorefractive effect by Er doping in ***LiTaO3***
AU Kostritskii, S. M.; Maring, D. B.; Tavlykaev, R. F.; Ramaswamy, R. V.
CS Kemerovo State University, Kemerovo, 650043, Russia
SO OSA Trends in Optics and Photonics Series (1999), 27(Advances in Photorefractive Materials, Effects, and Devices), 72-79
CODEN: OTOPFZ; ISSN: 1094-5695
PB Optical Society of America
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
AB Er doping increases significantly the photorefractive effect in ***LiTaO3*** . The mechanisms of increased photorefractivity attributed to Er doping are identified based on studies of Raman and fluorescence spectra. Potential applications toward high-efficiency nonvolatile ***holog*** . storage devices with two- ***color*** recording are discussed.
ST photorefractive effect erbium doping ***lithium*** ***tantalate***
IT Fluorescence
(anti-Stokes; enhancement of photorefractive effect by Er doping in ***LiTaO3***)
IT Refractive index
(change of; enhancement of photorefractive effect by Er doping in ***LiTaO3***)
IT Photorefractive effect
Photorefractive materials
(enhancement of photorefractive effect by Er doping in ***LiTaO3***)
IT ***Holography***
(enhancement of photorefractive effect by Er doping in ***LiTaO3*** in relation to)
IT Diffusion
(in-diffusion; enhancement of photorefractive effect by Er doping in ***LiTaO3*** prepd. by)
IT 7440-52-0, Erbium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(enhancement of photorefractive effect by Er doping in ***LiTaO3***)
IT 12031-66-2, Lithium tantalum oxide (***LiTaO3***)
RL: PRP (Properties)
(enhancement of photorefractive effect by Er doping in ***LiTaO3***)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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AN 1999:546319 CAPLUS <<LOGINID::20061206>>
DN 131:264490
ED Entered STN: 30 Aug 1999
TI Nonvolatile ***holographic*** storage in photorefractive ***lithium*** ***tantalate*** crystals with laser pulses
AU Imbrock, J.; Wevering, S.; Buse, K.; Kratzig, E.
CS Universitat Osnabruck, Fachbereich Physik, Osnabruck, D-49069, Germany
SO Journal of the Optical Society of America B: Optical Physics (1999), 16(9), 1392-1397
CODEN: JOBPDE; ISSN: 0740-3224
PB Optical Society of America
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
AB Nonvolatile ***holograms*** are recorded in photorefractive ***LiTaO3*** :Fe with laser pulses using two-step excitation. UV laser pulses (***wavelength*** .lambda.=355 nm) yield a strong increase of absorption (.ltoreq.600 m-1 at .lambda.=633 nm) and sensitize the crystals for subsequent IR (.lambda.=1064 nm) ***holog*** . recording. Refractive-index changes of .ltoreq.1.6 .times. 10-4 are achieved for intensities of the IR light of 1011 W/m2. The satn. values are proportional to the concn. of Fe3+ ions. Nondestructive readout with IR light is possible, and the ***holograms*** remain erasable for UV light. Typical time consts. of recording and erasure are 0.5 .mu.s for intensities of the UV light of 1011 W/m2. The results can be explained with a two-level charge-transport model.
ST ***holog*** optical storage photorefractive ***lithium*** ***tantalate***
IT ***Holography***
Photoinduced optical absorption
Photorefractive effect
Photorefractive gratings
Shallow traps
(***holog*** . storage in photorefractive ***lithium*** ***tantalate***)
IT Memory effect
(optical; ***holog*** . storage in photorefractive ***lithium*** ***tantalate***)
IT Laser radiation
(pulsed, nanosecond; ***holog*** . storage in photorefractive ***lithium*** ***tantalate***)
IT IR laser radiation
(recording/readout pulses; ***holog*** . storage in photorefractive ***lithium*** ***tantalate***)
IT UV laser radiation
(sensitizing/erasing pulses; ***holog*** . storage in photorefractive ***lithium*** ***tantalate***)
IT 7439-89-6, Iron, uses 15438-31-0, Iron(2+), uses 20074-52-6, Iron(3+), uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; ***holog*** . storage in photorefractive ***lithium*** ***tantalate***)
IT 12031-66-2, Lithium tantalum oxide (***LiTaO3***)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(***holog*** . storage in photorefractive ***lithium*** ***tantalate***)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L12 ANSWER 27 OF 33 CAPLUS
AN 1999:265196 CAPLUS <<LOGINID::20061206>>
DN 131:37701
ED Entered STN: 30 Apr 1999
TI Stoichiometric ***LiTaO3*** for dynamic ***holography*** in near UV ***wavelength*** range
AU Furukawa, Yasunori; Kitamura, Kenji; Niwa, Kazuo; Hatano, Hideki; Bernasconi, Pietro; Montemezzani, Germano; Gunter, Peter
CS National Institute for Research in Inorganic Materials, Tsukuba, 305-0044, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1999), 38(3B), 1816-1819
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***LiTaO3*** single crystals with near-stoichiometric compn. are grown using a double crucible Czochralski method equipped with an automatic powder supply system. Their photorefractive properties are compared with those of ***LiTaO3*** crystals grown from the congruent compn. melt. Two beam coupling expts. show that nearly stoichiometric ***LiTaO3*** crystals exhibit considerably higher photorefractive gain, speed and sensitivity than conventional congruent crystals. Due to the relatively large photocond. obsd. at near UV ***wavelengths*** ; stoichiometric crystals are further characterized by small photogalvanic fields, making them very attractive for dynamic ***holog*** . in this ***wavelength*** range.
ST stoichiometric ***lithium*** ***tantalate*** dynamic ***holog*** UV
IT ***Holography***
(dynamic, near UV; stoichiometric ***lithium*** ***tantalate*** for)
IT 12031-66-2, ***Lithium*** ***tantalate***
RL: TEM (Technical or engineered material use); USES (Uses)
(for dynamic ***holog*** . in near UV)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; Photorefractive Materials and Their Applications 1 1988, V1
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L12 ANSWER 28 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:277073 CAPLUS <<LOGINID::20061206>>
DN 126:300032
ED Entered STN: 30 Apr 1997
TI Light-induced charge transport processes in photorefractive crystals. Part 2. Materials
AU Buse, K.
CS Fachbereich Physik, Universitat Osnabruck, Osnabrueck, D-49069, Germany
SO Applied Physics B: Lasers and Optics (1997), 64(4), 391-407
CODEN: APBOEM; ISSN: 0946-2171
PB Springer
DT Journal; General Review
LA English
CC 76-0 (Electric Phenomena)
Section cross-reference(s): 73, 74
AB A review with 254 refs. on the charge transport processes in different photorefractive oxide crystals is given and consequences for applications are outlined. The light-induced charge transport processes in LiNbO3, ***LiTaO3*** , BaTiO3, Ba1-xSrxTiO3 (0 .ltoreq. x .ltoreq. 1, BST), Ba1-xCaxTiO3 (0 .ltoreq. x .ltoreq. 1, BCT), KNbO3, KTa1-xNbxO3 (0 .ltoreq. x .ltoreq. 1, KTN), Sr1-xBaxNbpO6 (0 .ltoreq. x .ltoreq. 1, SBN) and Bi12(Si,Ti,Ge)O20 (BSO, BTO, BGO) are discussed. Utilizing the knowledge on the charge transport processes, consequences for applications are deduced; improved techniques for nondestructive readout of ***holograms*** with light of the recording ***wavelength*** are described.
ST review light charge transport photorefractive material; oxide photorefractive charge transport ***holog*** review
IT Photorefractive materials
(light-induced charge transport processes in)
IT Oxides (inorganic), properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(light-induced charge transport processes in photorefractive)
IT Electric transport properties
Photoconductivity
(light-induced charge transport processes in photorefractive materials)
IT ***Holographic*** diffraction gratings
(light-induced charge transport processes in photorefractive materials utilized for)
IT Laser radiation
(pulsed; light-induced charge transport processes in photorefractive materials utilized for)

L12 ANSWER 29 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1994:19071 CAPLUS <<LOGINID::20061206>>
DN 120:19071
ED Entered STN: 08 Jan 1994
TI Imaging of coherent phonons
AU Wesner, J.; Wuerz, K. U.; Hillmann, K.; Grill, W.
CS Phys. Inst., Johann Wolfgang Goethe-Univ., Frankfurt, W-6000, Germany
SO Springer Series in Solid-State Sciences (1993), 112(Phonon Scattering in Condensed Matter VII), 68-70
CODEN: SSSSDV; ISSN: 0171-1873
DT Journal
LA English
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 75
AB As a new method of phonon-imaging in crystals the authors introduce a ***holog*** . detection scheme using monochromatic ultrasonic waves of frequencies up to 1 GHz. A phase-sensitive scanning acoustic microscope (PSAM) has been developed (details to be published elsewhere) with a lateral resoln. in the range of 1 .mu.m and a phase resoln. better than a thousandth of a ***wavelength*** . Detecting phase and amplitude simultaneously, the PSAM shows the first acoustic ***holograms*** of

anisotropic crystals and allows the investigation of acoustic anisotropy at room temps.
ST acoustic ***holog*** coherent phonon imaging; anisotropic crystal ***holog*** acoustic phonon imaging
IT Phonon
(imaging of coherent, ***holog*** . detection in)
IT Photoacoustic effect
(in anisotropic crystals, ***holog*** . in)
IT Sound and Ultrasound
(propagation in anisotropic crystals, in imaging of coherent phonons)
IT ***Holography***
(acoustic, of anisotropic crystals)
IT Crystal structure types
(anisotropic, acoustic ***holog*** . of, for imaging of coherent phonons)
IT 1303-00-0, Gallium arsenide, uses 12031-66-2, ***Lithium*** ***tantalate*** (***litao3***)
RL: USES (Uses)
(acoustic ***holograms*** of anisotropic crystals of)

L12 ANSWER 30 OF 33 CAPLUS
AN 1983:43264 CAPLUS <<LOGINID::20061206>>
DN 98:43264
ED Entered STN: 12 May 1984
TI Photorefraction and anisotropic light scattering in lithium niobate(V)-iron crystals
AU Augustov, P. A.; Reinfelde, M.; Shvarts, K. K.
CS Inst. Phys., Salaspils, SU-229021, USSR
SO Applied Physics A: Solids and Surfaces (1982), A29(3), 169-72
CODEN: APSFDB; ISSN: 0721-7250
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
AB By ***holog*** . recording in LiNbO3-Fe and ***LiTaO3*** -Fe crystals, a new light scattering effect was obsd. with an optical indicatrix along the optical axis. The kinetics of the light scattering depends on the intensity, ***wavelength*** , as well as the polarization of the incident light. A ***holog*** . vol. grating is created by the interference of an incident light and light scattered by crystal inhomogeneities.
ST ***holog*** recording anisotropic light scattering; lithium niobate iron anisotropic scattering; ***tantalate*** ***lithium*** iron anisotropic scattering
IT Interference
(between incident light and scattered light in iron-doped ***lithium*** niobate or ***lithium*** ***tantalate***)
IT Diffraction gratings
(***holog*** . vol., by interference of incident light from scattered light in crystals)
IT Optical anisotropy
(in light scattering by iron-doped ***lithium*** niobate and ***lithium*** ***tantalate***)
IT Laser radiation
Light
(scattering anisotropy of, in iron-doped ***lithium*** niobate and ***lithium*** ***tantalate***)
IT 7439-89-6, properties
RL: PRP (Properties)
(photorefraction and anisotropic light scattering by ***lithium*** niobate or ***lithium*** ***tantalate*** contg.)
IT 12031-63-9 12031-66-2
RL: USES (Uses)
(photorefraction and anisotropic light scattering in iron-contg.)

L12 ANSWER 31 OF 33 CAPLUS
AN 1975:178047 CAPLUS <<LOGINID::20061206>>
DN 82:178047
ED Entered STN: 12 May 1984
TI ***Holographic*** formation of gratings in optical waveguiding layers
AU Wood, Van E.; Hartman, N. F.; Verber, C. M.; Kenan, R. P.

CS Battelle Mem. Inst., Columbus, OH, USA
SO Journal of Applied Physics (1975), 46(3), 1214-15
CODEN: JAPIAU; ISSN: 0021-8979
DT Journal
LA English
CC 73-8 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
Section cross-reference(s): 74
AB Thick phase gratings were formed photorefractively (through optically induced changes) in planar optical waveguides by intersecting short- ***wavelength*** coherent guided beams. In multimode guides formed by effusing Li from LiNbO3, max. diffraction efficiencies were 52% at the 0.488-.mu.m write ***wavelength*** and 3.1% at 0.633 .mu.m. In a 2-mode LiTa1-xNbxO3 guide formed by diffusing Nb into ***LiTaO3*** at 1100.degree., diffraction efficiencies were 65% and 28% at the same 2 ***wavelengths*** , resp.
ST diffraction grating ***holography*** ; waveguide optical grating; niobate lithium diffraction grating; ***tantalate*** ***lithium*** diffraction grating niobium
IT Waveguides
(diffraction grating formation in optical, ***holog*** .)
IT ***Holography***
(diffraction grating formation in waveguiding layers by)
IT Diffraction gratings
(***holog*** . formed, in optical waveguides)
IT 7439-93-2, uses and miscellaneous
RL: USES (Uses)
(diffraction gratings from lithium niobate contg.)
IT 7440-03-1, uses and miscellaneous
RL: USES (Uses)
(diffraction gratings from ***lithium*** ***tantalate*** contg., ***holog*** . formed)
IT 12031-63-9
RL: USES (Uses)
(diffraction gratings from lithium-contg.)
IT 12031-66-2
RL: PRP (Properties)
(diffraction gratings from niobium-contg.)

L12 ANSWER 32 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1974:456583 CAPLUS <<LOGINID::20061206>>
DN 81:56583
ED Entered STN: 12 May 1984
TI Sensitivity and fatigue of ***lithium*** ***tantalate*** (V) for ***holographic*** recording
AU Spinhirne, J. M.; Estle, T. L.
CS Phys. Dep., Rice Univ., Houston, TX, USA
SO Applied Physics Letters (1974), 25(1), 38-9
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 73
AB The sensitivity of ***LiTaO3*** crystals to ***hologram*** formation was obsd. to vary with impurity concn. For a writing ***wavelength*** of 488.0 nm and power d. of 1.1 W/cm2 the sensitivity varied from a value comparable to the most sensitive doped LiNbO3 for an impure crystal to a value more than 5 orders of magnitude smaller for a purer crystal. Fatigue effects were obsd. upon write-erase cycling. These effects were dependentupon writing and erasure polarization and power d. and could be minimized by proper choice of optical parameters.
ST sensitivity ***lithium*** ***tantalate*** ***holog***
IT ***Holography***
(***lithium*** ***tantalate*** crystals for, sensitivity and fatigue of)
IT 12031-66-2
RL: USES (Uses)
(***holog*** . recording material, sensitivity and fatigue of)

L12 ANSWER 33 OF 33 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1973:77876 CAPLUS <<LOGINID::20061206>>
DN 78:77876

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ED   Entered STN:  12 May 1984
TI   Optical index damage in electrooptic crystals
AU   Glass, A. M.; Peterson, George Earl; Negran, T. J.
CS   Bell Lab., Murray Hill, NJ, USA
SO   Nat. Bur. Stand. (U. S.), Spec. Publ. (1972), No. 372, 15-26
     CODEN: XNBSAV
DT   Report
LA   English
CC   73-6 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance,
     and Other Optical Properties)
     Section cross-reference(s): 70, 74
AB   Optical and EPR studies of LiNbO3 and   ***LiTaO3***   crystals showed
     that Fe2+ impurity ions in nominally pure material were responsible for
     the laser-induced n damage.  The effects of stoichiometry variation, heat
     treatment, impurity and   ***color***   -center content, x-irradn., and the
     kinetics of the n-damage process were accounted for by Fe2+-Fe3+
     reactions.  Careful control of crystal growth and stabilization of the
     Fe3+ impurity state in these crystals gave as much as 4 orders of
     magnitude of damage resistance.  Laser-induced changes in n were used in
     an erasable pure-phase   ***holographic***   memory; they are proposed for
     distributed feedback systems and in integrated optics.
ST   laser damage electrooptic crystal; lithium niobate laser damage;
       ***tantalate***     ***lithium***   laser damage; refraction laser damage;
       ***holography***   laser damage; optics integrated laser damage
IT     ***Holography***
        (erasable pure-phase memory, laser-induced refractive index changes of
        electrooptic crystals in relation to)
IT   Memory effect, chemical and physical
        (  ***holographic***   erasable pure-phase, laser-induced refractive
        index damage to electrooptic crystals in relation to)
IT     ***Color***   centers
        (in electrooptic crystals, laser-induced refractive index damage in
        relation to)
IT   Optics
        (integrated, laser-induced refractive index damage to electrooptic
        crystals in relation to)
IT   Refractive index and Refraction
        (of electrooptic crystals after irradiation by laser beam, changes in)
IT   Electron spin resonance
     Optical absorption
        (of electrooptic crystals contg. iron impurities, laser-induced
        refractive index damage in relation to)
IT   Valence
        (of iron, in electrooptic crystals, refractive index damage by laser
        irradiation in relation to)
IT   Laser radiation, chemical and physical effects
        (refractive index damage of electrooptic crystals contg. iron
        impurities by)
IT   X-ray, chemical and physical effects
        (refractive index damage to electrooptic crystals irradiated by)
IT   7439-89-6, properties
     RL: PRP (Properties)
        (refractive index damage by laser irradn. in electrooptic crystals
        contg.)
IT   12031-63-9   12031-66-2
     RL: USES (Uses)
        (refractive index damage by laser irradn. in iron-contg.)


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     (FILE 'HOME' ENTERED AT 08:00:29 ON 06 DEC 2006)

     FILE 'INSPEC, CAPLUS' ENTERED AT 08:00:40 ON 06 DEC 2006
L1          7828 S (LITHIUM(5A)TANTALATE) OR LITAO3
L2           508 S L1 AND STOICHIOMET?
L3             7 S L2 AND GATING
L4             1 S L2 AND GATED
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L5           8 S L3 OR L4
L6         178 S L1 AND HOLOGRA?
L7           1 S L6 AND STABLE
L8           0 S L6 AND VOLTILE
L9           2 S L6 AND VOLATILE
L10         42 S L6 AND (WAVELENGTH OR COLOR)
L11          3 S L7 OR L9
L12         33 S L10 NOT (L11 OR L5)

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